THE OIL WEEKLY

ENGINEERING « NEWS » STATISTICS

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The Oil Man's Calendar

DEC. 4- 7	American Society of Mechanical Engineers, Philadelphia.
4- 9	Exposition of Chemical Industries, Grand Central Palace, New York.
7- 8	Mid-Continent Oil & Gas Association, Standing Tax Committees, Rice Hotel, Houston, Texas.
11	West Central Texas Oil & Gas Association, Mineral Wells, Texas.
14-15	Petroleum Electric Power Association, Texas State Hotel, Houston, Texas.
18	Mid-Continent Oil & Gas Association, Board of Directors, Tulsa, Okla.
JAN. 12-13	Louisiana Engineering Society, St. Charles Hotel, New Orleans.
FEB. 12-15	American Institute of Mining & Metallurgical Engineers, New York.
MAR. 14-15	American Petroleum Institute, Mid-Continent District, Division of Production, Wichita, Kansas.
28-29	American Petroleum Institute, Southwestern District, Division of Production, Houston, Texas.
APR. 10-12	American Association of Petroleum Geologists, Chicago.
11-12	American Petroleum Institute, Eastern District, Division of Production, Columbus, Ohio.
MAY 18-25	International Petroleum Exposition & Congress, Tulsa.

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THE OIL WEEKLY

NOVEMBER 27, 1939

VOLUME 95 NUMBER 12

The Week's Panorama

Around 1929 Levels . . . . .

The general business situation has continued highly conducive to a favorable picture in oil. Industrial production of the United States currently is around the all-time high level of the spring of 1929.

The Federal Reserve Board has found that industrial output in the first half of November approached or possibly exceeded the previous record high, having increased further from the average in October, when the board's index stood at 120 percent of the 1923-1925 average. The November gains put the index around the all-time peak of 125 that was reached in June, 1929. The high of the 1936-1937 boom was 121, reached in December, 1936.

More Purchasing Power . . .

Along with the exceptionally large industrial production have come sharp increases in employment and industrial payrolls, particularly at steel mills and on the railroads. The increased employment means broadened consumer purchasing power, which should benefit the oil industry as well as other lines.

Crude Control Strict . . . . .

Although the oil industry's outlook is somewhat clouded by the threat of an uneconomic accumulation of gasoline during the winter, encouragement is offered by the prospect of continued tight control of crude oil production, at a time when crude stocks are exceptionally small.

The prorated states, which account for about 90 percent of the national crude production, contemplate extension of strict allowables through December. (Texas fields, yielding 40 percent of the United States output, will be shut in during 12 days of the month, staying within market demand.)

United States crude stocks still are near their recent 17½-year low, and refiners therefore cannot draw heavily on storage for their raw material, being obliged to operate largely on the moderate supplies available at the wells.

Under the circumstances, there is little choice for refiners except to hold runs to stills within fairly satisfactory limits.

Oil Inventories . . . . . .

The latest weekly statistics of the oil industry showed an addition of 425,000 barrels to gasoline stocks, despite curtailment of crude production and refinery runs. Inventories of both heating oils and industrial fuel oils were further reduced. Crude stocks remained near their low since 1922.

Federal Control "Near" . . .

If the Cole bill for federal control of the oil industry passes, it will go into the books over the protests of nearly all elements in the industry.

Nevertheless, some oil men are of the opinion that federal regulation inevitably will supersede control by the states. Of this opinion is, for example Alf M. Landon, oil operator and former governor of Kansas and the Republican presidential nominee in 1936. Last week he deprecated federal control but said, "State control of the oil industry is closer to being on the way out, and federal control is closer to being on the way in than at any period since the NRA."

Cole Committee Plans . . . . .

The Cole subcommittee plans to hear much additional testimony as well as to visit the oil and gas fields of the Middle West and Southwest before making legislative recommendations to the House of Representatives in the next session of Congress.

The committee of five will inspect Illinois fields December 8 and subsequently fields in East Texas and Louisiana, before beginning hearings in New Orleans December 15, where state oil conservation officials will have opportunity to defend their administrations. After Congress convenes in January, the committee will resume hearings, at which oil men will appear as witnesses.

The Cole bill has the support of President Roosevelt as well as the Secretaries of the Interior, Navy, and War.

Venezuelan Oil . . . . . .

Scheduled to become effective December 16 is the reciprocal trade agreement between the United States and Venezuela, from which various groups in the United States will benefit at the expense of U. S. oil producers. Under the agreement, the excise tax on crude oil and fuel oil imported from Venezuela will be reduced; and in return, Venezuela has granted concessions to United States business in several lines.

Steel Prices . . . . . .

If the steel companies can maintain operations around current high levels, they may not find it necessary to advance prices of their products. For their earnings have been materially improved by increased volumes of business, despite higher costs of raw materials.

In reaching approximately 94 percent of capacity, United States steel production last week was at a new high. A year ago the mills were operating at 62 percent of capacity.

Industry's Chief Problem Is Control of Gasoline Stocks

By L. J. LOGAN, Associate Editor

SOME sagging of the gasoline market in recent weeks, in the face of strong markets for most of the other petroleum products, has emphasized the principal problem with which the industry must contend in coming months. This problem is that of holding gasoline production and inventories within economic limits during the winter, while at the same time providing enough fuel oils to meet comparatively large demand.

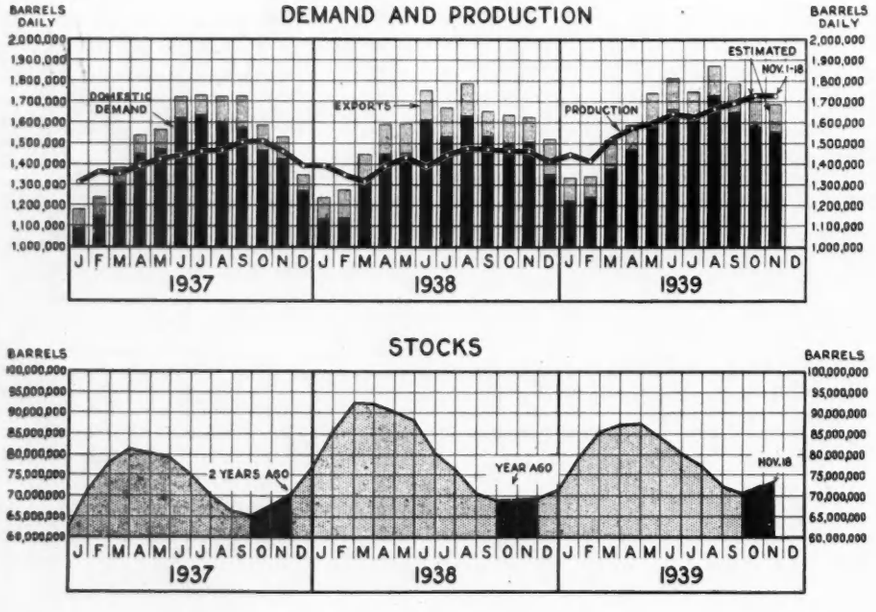
The obvious approach to the problem is through the regulation of yields of the various products at the refineries—a holding down of the yield of gasoline and the taking of relatively large amounts of the needed fuel oils from the barrel of crude. This precaution actually is being taken by many refiners, but for the industry as a whole, the results are not particularly successful.

Similarly, some refiners that have found themselves with excessive gasoline stocks have cut down their crude runs or even temporarily closed down their plants, to avoid further piling up of gasoline, even though their action has meant passing up of fuel oil sales.

The industry has to contend every fall and winter with this problem of avoiding surplus gasoline stocks while supplying seasonally large fuel oil demand. But this year, the problem has been accentuated by two circumstances: (1) the fact that fuel oil demand has been relatively greater than gasoline demand, and (2) the fact that inventories of gasoline have been excessive, while those of both light and heavy fuel oils have been comparatively small.

The result has been that in meeting the market demand for fuel oils, the industry has had difficulty in maintaining adequate stocks of those oils, despite large current output at the refineries. Consequently, inventories of both the heating oils and the industrial oils are smaller now than they were a year ago, although demand is materially greater for both classes of oils. On the other hand, the large refinery runs have caused the maintenance of gasoline stocks out of proportion to the gain that has occurred in gasoline demand. Although gasoline stocks were seriously excessive a year ago, they are materially larger now than then, and the gain has been even greater than the increase which has occurred meanwhile in gasoline demand.

GASOLINE SITUATION



Heating Oil Situation

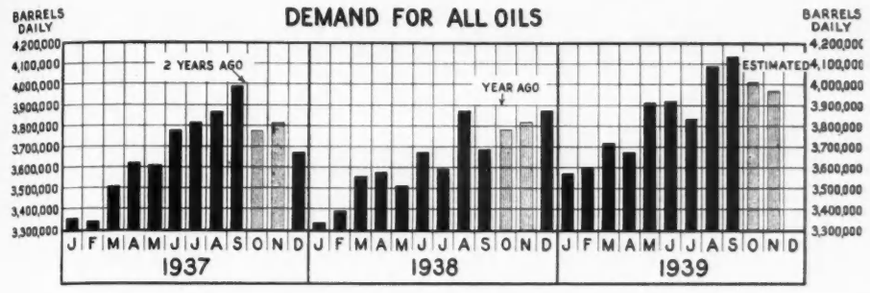
Stocks of heating oils have been built up less than normally in preparation for the season of heavy consumption, and currently are approximately 4 percent smaller than a year ago; although demand has been materially larger this year than last year.

In the first 9 months of 1939, the total demand for gas oil and distillate fuel was 13.1 percent greater than that in the similar period of 1938; domestic consumption having been 14.8 percent greater and exports 7.6 percent larger. In September the total demand for these light oils continued relatively large, having been 10.8 percent greater than in September, 1938. However, exports were relatively better than domestic consumption. The shipments abroad were 24.2 percent larger in September, 1939, than in September, 1938; whereas domestic use was up 7.1 percent.

The stocks of gas oil and distillate fuel in the United States totaled 39,293,000 barrels on November 18, according to the American Petroleum Institute, a quantity 4.1 percent smaller than that held on the corresponding date last year.

Heavy Fuel Oils

Reflecting the fact that industrial activity in the United States during recent months has been around all-time record levels, the oil industry has been taking some residual fuel oil out of storage in order to meet demand, which has exceeded the current output at the refineries. The stocks of residual fuel oil currently are almost 10 percent smaller than a year ago, although de-


DEMAND FOR ALL OILS
BARRELS DAILY
2 YEARS AGO
YEAR AGO
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1937
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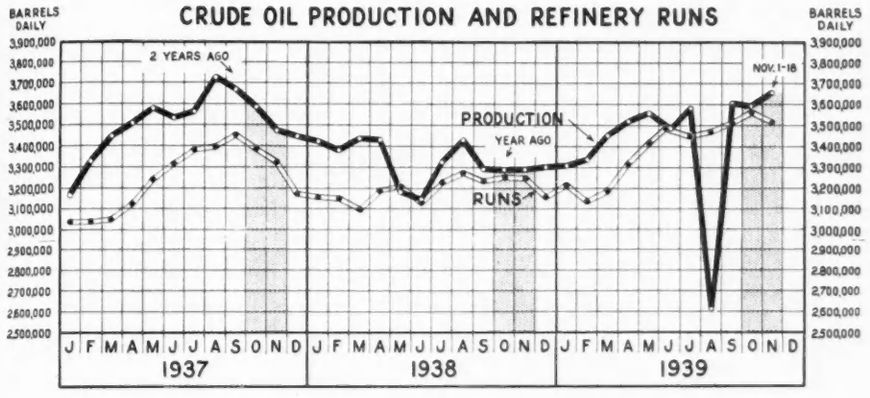

CRUDE OIL PRODUCTION AND REFINERY RUNS
BARRELS DAILY
2 YEARS AGO
PRODUCTION
YEAR AGO
RUNS
NOV. 1-18
J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D
1937
1938
1939

mand is running materially higher.

In the first 9 months of 1939, the total demand for residual fuel oil was 10.8 percent larger than that in the corresponding months of 1938. Domestic consumption was chiefly responsible for that gain, having been 11.3 percent greater this year than last year, while exports were up 3.7 percent. In September there was a quickening of demand, total requirements having been 13.8 percent larger than in September of last year. Domestic consumption showed a further increase, having been 15.1 percent larger than in September, 1938. But exports reacted unfavorably, having been 3.4 percent lower than in September of last year. The slowing down of shipments abroad probably reflected the interruption of shipping in the first month of the European war.

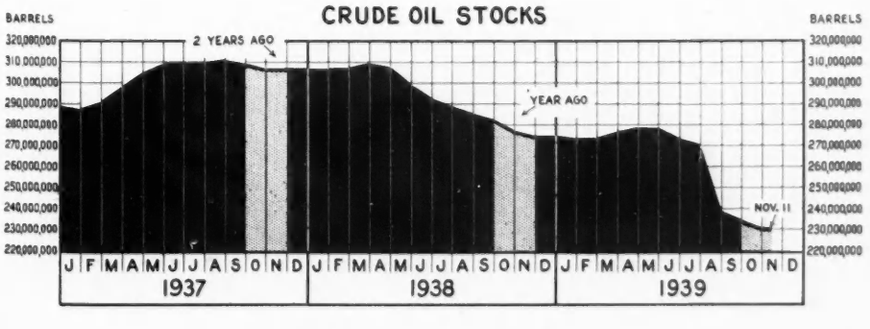
Stocks of residual fuel oil on November 18, as reported to the American Petroleum Institute, totaled 112,760,000 barrels, or 9.6 percent less than at the corresponding time last year.

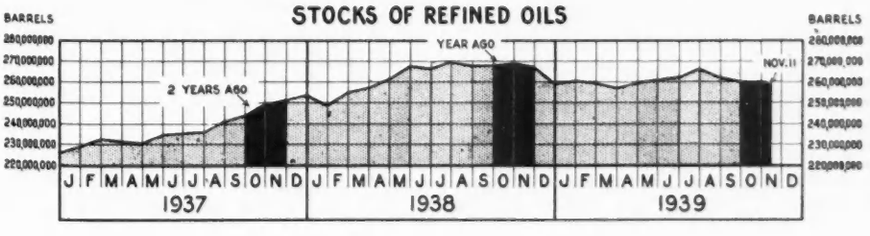
Gasoline Situation

In the effort to take care of the relatively large fuel oil demand, refinery runs have been so high as to result in production of more gasoline than the markets would absorb. Since the beginning of October gasoline has been going into storage, although the industry normally draws on storage through October and during half or all of November. Gasoline stocks, therefore, are now around 10,000,000 barrels larger than economically desirable. They are about 6 percent greater than at this time last year, whereas stocks even lower than those of a year ago would be economically desirable. Demand for gasoline has been running around 5 percent higher this year than last year, but a similar gain in stocks is not justified, as the inventories were seriously burdensome in the fall and winter of 1938-1939.

In contrast with the remarkably strong demand for fuel oils and also for some other products, notably lubricants, the market needs of gasoline have been relatively less brisk, although continuing to show gains over last year.

In its forecast for December, the Bureau of Mines has anticipated that total demand for gasoline will be 2.4 percent larger than in De-





Changes from Year Ago in Stocks of Crude and Refined Oils in the United States

Barrels of 42 U. S. Gallons

LATEST WEEKLY DATA

(Sources: Crude Stocks, Bureau of Mines; all other figures, American Petroleum Institute.)

STOCKS OF:	Nov. 19 1938	Nov. 18, 1939	Percent Change
Gasoline	69,423,000	73,696,000	+ 6.1
[1]Gas Oil & Distillate Fuels	32,480,000	31,164,000	— 4.1
[1]Residual Fuel Oil	119,301,000	107,794,000	— 9.6
Crude Oil	[2]273,394,000	[2]230,037,000	—15.9

LATEST MONTHLY DATA

(Source: Bureau of Mines)

ITEM	Stocks at End of September 1938	1939	Percent Change
Summary			
Crude Petroleum:			
Refinable in U.S.	282,756,000	234,555,000	—20.5
Heavy in Calif.	17,535,000	14,085,000	—24.5
Natural Gasoline	8,159,000	5,891,000	—38.5
Refined Products	268,137,000	260,896,000	— 2.7
Total, all oils	576,587,000	515,427,000	—11.9
Days' supply:			
September basis	157,000	125,000	—25.6
9 Mo. basis	161,000	135,000	—19.3
Products			
Gasoline:			
Finished	63,163,000	65,498,000	+ 3.7
Unfinished	5,923,000	5,494,000	— 7.8
Total	69,086,000	70,992,000	+ 2.8
Kerosene	10,497,000	9,952,000	— 5.5
[4]Gas Oil and Distillate Fuels	30,860,000	30,018,000	— 2.8
[4]Residual Fuel Oils	102,831,000	95,051,000	— 8.2
Lubricants	7,605,000	6,704,000	—13.4
Wax (thousands of pounds)	129,018,000	89,584,000	—44.0
Coke (short tons)	622,600,000	668,000,000	+ 7.3
Asphalt (short tons)	471,100,000	475,000,000	+ 0.8
Road Oil	827,000	791,000	— 4.6
Miscellaneous	265,000	315,000	+18.9
Other Unfinished Oils	40,001,000	40,801,000	+ 2.0

[1] At refineries only, except in California.
[2] Stocks November 12, 1938.
[3] Stocks November 11, 1939.
[4] At refineries only.

Somewhat Less Favorable Gasoline Demand Indicated by Latest Bureau of Mines Forecast

(Barrels)

MONTH	Total Demand for Domestic Crude	MOTOR FUEL DEMAND		
		Domestic	Export	Total
October:				
October, 1939, forecast	111,300,000	48,900,000	4,500,000	53,400,000
October, 1938, actual	107,528,000	46,272,000	4,526,000	50,798,000
Change from year ago	+3.5%	+5.7%	—0.6%	+5.1%
November:				
November, 1939, forecast	108,600,000	46,700,000	3,900,000	50,600,000
November, 1938, actual	102,717,000	44,991,000	3,698,000	48,689,000
Change from year ago	+5.7%	+3.8%	+5.5%	+3.9%
December:				
December, 1939, forecast	112,210,000	43,600,000	4,600,000	48,200,000
December, 1938, actual	102,271,000	41,649,000	5,423,000	47,072,000
Change from year ago	+9.7%	+4.7%	—15.2%	+2.4%

cember of last year, an increase smaller than the gains shown in recent months, due partially to the prospect of relatively light exports. Domestic consumption of gasoline was estimated 4.7 percent larger for December, 1939, than for December, 1938. But 15.2 percent smaller exports were foreseen.

In the first 9 months of 1939, total demand for gasoline was 4.9 percent larger than that in the similar period of 1938, with domestic consumption 5.7 percent larger and exports down 2.9 percent. In September, 1939, the total demand was 7.8 percent larger than in September, 1938. Domestic consumption was up 6.9 percent and exports were 19.9 percent larger.

Although official figures are not yet available on gasoline demand in October, weekly statistics on refinery production and stocks indicate that during the month the markets absorbed only about 2.5 percent more gasoline than they did in October of last year.

It is not yet known, similarly, how November consumption of 1939 will compare with that of 1938. But the Bureau of Mines estimated before the beginning of November that the total demand for gasoline during the month would be 3.9 percent larger than that in November of last year, with domestic use up 3.8 percent and exports 5.5 percent larger.

Demand for Oil Better This Year Than Last Year

Figures indicate barrels and are from Bureau of Mines

ITEM	SEPTEMBER			FIRST 9 MONTHS		
	1938	1939	Percent Change	1938	1939	Percent Change
SUMMARY						
Total Demand	110,390,000	124,047,000	+ 12.4	978,790,000	1,045,145,000	+ 6.8
Daily average	3,680,000	4,135,000	+ 12.4	3,585,000	3,828,000	+ 6.8
Exports:						
Crude petroleum	5,577,000	6,925,000	+ 24.2	59,989,000	55,147,000	— 8.1
Refined products	9,487,000	10,797,000	+ 13.8	87,391,000	90,731,000	+ 3.8
Domestic Demand:						
Motor fuel	46,150,000	49,347,000	+ 6.9	389,812,000	411,901,000	+ 5.7
Kerosene	4,187,000	4,638,000	+ 10.8	38,994,000	42,846,000	+ 9.9
Gas oil and distillate fuels	8,655,000	9,271,000	+ 7.1	79,998,000	91,857,000	+ 14.8
Residual fuel oils	23,041,000	26,514,000	+ 15.1	208,931,000	232,512,000	+ 11.3
Lubricants	2,127,000	2,207,000	+ 3.8	15,859,000	17,205,000	+ 8.5
Wax	68,000	116,000	+ 70.6	791,000	719,000	— 9.1
Coke	636,000	433,000	— 31.9	4,121,000	5,071,000	+ 23.1
Asphalt	2,983,000	3,326,000	+ 11.5	18,695,000	20,457,000	+ 9.4
Road oil	1,097,000	1,072,000	— 2.3	6,783,000	6,986,000	+ 3.0
Still gas	5,577,000	5,609,000	+ 0.6	49,648,000	49,492,000	— 0.3
Miscellaneous	131,000	171,000	+ 30.5	1,338,000	1,677,000	+ 25.3
Losses	674,000	3,621,000	+ 43.7	16,440,000	18,544,000	+ 12.8
Total domestic demand	95,326,000	106,325,000	+ 11.5	831,410,000	899,267,000	+ 8.2
Daily average	3,178,000	3,544,000	+ 11.5	3,045,000	3,294,000	+ 8.2
TOTAL DEMAND FOR PRODUCTS						
Motor Fuel:						
Domestic	46,155,000	49,347,000	+ 6.9	389,812,000	411,901,000	+ 5.7
Exports	3,528,000	4,232,000	+ 19.9	36,462,000	35,420,000	— 2.9
Total	49,683,000	53,579,000	+ 7.8	426,274,000	447,321,000	+ 4.9
Kerosene:						
Domestic	4,187,000	4,638,000	+ 10.8	38,994,000	42,846,000	+ 9.9
Exports	813,000	577,000	— 40.9	5,694,000	5,917,000	+ 3.9
Total	5,000,000	5,215,000	+ 4.3	44,688,000	48,763,000	+ 9.1
Gas Oil and Distillate Fuels:						
Domestic	8,655,000	9,271,000	+ 7.1	79,998,000	91,857,000	+ 14.8
Exports	2,428,000	3,015,000	+ 24.2	23,384,000	25,151,000	+ 7.6
Total	11,083,000	12,286,000	+ 10.8	103,382,000	117,008,000	+ 13.1
Residual Fuel Oils:						
Domestic	23,041,000	26,514,000	+ 15.1	208,931,000	232,512,000	+ 11.3
Exports	1,680,000	1,624,000	— 3.4	13,270,000	13,758,000	+ 3.7
Total	24,721,000	28,138,000	+ 13.8	222,201,000	246,270,000	+ 10.8
Lubricants:						
Domestic	2,127,000	2,207,000	+ 3.8	15,859,000	17,205,000	+ 8.5
Exports	852,000	1,012,000	+ 18.8	7,327,000	8,496,000	+ 16.0
Total	2,979,000	3,219,000	+ 8.0	23,186,000	25,701,000	+ 10.8
Wax (thousands of pounds):						
Domestic	19,303,000	32,651,000	+ 69.1	221,441,000	201,073,000	— 10.1
Exports	24,015,000	30,193,000	+ 25.7	140,540,000	186,479,000	+ 32.6
Total	43,318,000	62,844,000	+ 45.1	361,981,000	387,552,000	+ 7.1
Coke (short tons):						
Domestic	127,300,000	86,600,000	— 47.0	824,300,000	1,014,300,000	+ 23.0
Exports	11,500,000	38,200,000	+232.2	92,500,000	212,000,000	+129.2
Total	138,800,000	124,800,000	— 11.2	916,800,000	1,226,300,000	+ 33.8
Asphalt (short tons):						
Domestic	542,300,000	604,700,000	+ 11.5	3,399,100,00	3,719,300,000	+ 9.4
Exports	4,900,000	4,400,000	+ 11.4	36,700,000	34,500,000	— 6.4
Total	547,200,000	609,100,000	+ 11.3	3,435,800,000	3,753,800,000	+ 9.2
Road Oil:						
Domestic	1,097,000	1,072,000	— 2.3	6,783,000	6,986,000	+ 3.0
Miscellaneous:						
Domestic	131,000	171,000	+ 30.5	1,338,000	1,677,000	+ 25.3
Exports	15,000	14,000	— 7.1	88,000	74,000	— 18.9
Total	146,000	185,000	+ 26.7	1,426,000	1,751,000	+ 22.8

Oil Export Situation

Although oil exports have not increased as sharply since the declaration of war as some had expected, substantial gains have occurred. Shipments to the belligerents of Europe have been smaller, but exports to Canada and to some other countries, perhaps to some extent for re-export to belligerents, have expanded.

In September, first month of the new war, exports of crude oil from the United States were 24.2 percent larger than in September of last year, while shipments of refined products were up 13.8 percent.

Both France and the United Kingdom imported less gasoline from the United States in September than in August. But Canada's gasoline purchases jumped a million barrels, from 308,275 barrels in August to 1,389,634 in September; while the shipments to the Dutch West Indies rose from 336,139 to 631,369 barrels. Germany's takings of American gasoline stopped completely in September. But Russia, which had not bought gasoline in the United States since October, 1938, took away in September 248,154 barrels, equivalent to about three tanker loads, although the entire amount went in containers.

Range of Application of Gas-Lift Methods

By E. C. BABSON, Union Oil Company of California

PART 1

THIS article presents results of an investigation of gas-lift methods conducted under the auspices of the Production Practice Committee of the American Petroleum Institute's Division of Production. Pressure held against the formation and gas requirements are evaluated for: (1) straight gas lift; (2) plunger lift; (3) intermitters; and (4) gas-displacements pump. Comparisons of various methods are given, and some suggestions made for application of the results to actual production problems.

The paper was presented at the Twentieth Annual Meeting of the American Petroleum Institute, Stevens Hotel, Chicago, November 17, 1939.

The statements and opinions expressed herein are those of the author, and should not be construed as an official action or opinion of the Institute or of this magazine.

Because of the great length of the study, it of necessity must be published in several parts. Other installments will appear in forthcoming issues of THE OIL WEEKLY.

EXTENSIVE USE of gas-lift methods in the production of oil during the past 13 years has resulted in a growing realization of the desirability of determining the conditions in which these methods will give satisfactory performance, and in the gradual accumulation of sufficient production and subsurface-pressure data to make possible the evaluation of this range of application. The California Section of the Institute's Production Practice Committee, therefore, has sponsored the collection and analysis of available information. By contributing data and ideas, many organizations and individuals have assisted the writer in developing correlations of the factors involved. These correlations are not as complete as might be desired, but it is hoped that they will provide a valid basis for the evaluation of gas-lift behavior.

Scope of Investigation

The gas-lift methods investigated are: 1, straight gas lift; 2, flow valves; 3, plunger lift; 4, intermitters; and, 5, gas-displacement pump. All of these methods have demonstrated by actual operation in oil wells that they can give satisfactory service when properly applied.

The behavior of a producing well is the result of two sets of components: 1, characteristics of the well; and, 2, characteristics of the lifting equipment. The well characteristics depend upon the behavior of the producing formation and upon the manner in which the well has been drilled, cased, and completed. From the standpoint of the present discussion, the most important well characteristics are: 1, reservoir or static pressure; 2, productivity index; 3, formation gas-oil ratio; 4 percent water; 5, depth; 6, size and condition of casing; and, 7, size and condition of liner. Sand production, paraffin deposition, or corrosive conditions may be of major importance, but are not susceptible of quantitative evaluation. Except for static pressure and productivity index (which have been discussed quite thoroughly in the literature[1a, 2]), these well characteristics usually can be obtained from production records. If the productivity index varies with rate of production, a curve of bottom-hole pressure plotted against rate of production should be used.

To permit independent evaluation of equipment characteristics, it is assumed that well characteristics can be determined with convenience and accuracy, and are unaffected by the lifting method at a given rate of production. The most important characteristics of any gas-lift method are: 1, back pressure held against the formation; and, 2, gas consumption. The effectiveness of the installation, or the ratio of the actual production to the production for zero bottom-hole pressure, is a function of the back pressure held against the formation; whereas the lifting efficiency is determined largely by the gas consumption. The reactions of the various types of equipment to sand, paraffin, and scale are important, and will be mentioned when known.

Among the many attempts that have been made to develop the mathematical laws governing the flow of oil and gas mixtures, the contributions of Versluys,[3, 4] Moore and Wilde,[5] Moore and Schiltuis,[6] May,[7] and Gosline[8] are outstanding. Unfortunately the methods proposed are either cumbersome or inapplicable to the range of conditions in which most gas-lift operations are conducted. As a result, it seems necessary to evaluate the equipment characteristics empirically, and to eliminate theoretical considerations and assumptions as much as possible. One necessary assumption is that, for a given depth, size of flow string, oil gravity, and water content, the pressure at the bottom of the tubing will be dependent solely upon the tubing pressure and the rates of oil and gas production. This assumption does not hold always when applied to wells in different fields, and even in a single field there seems to be

[a]Figures refer to bibliography at end of article.

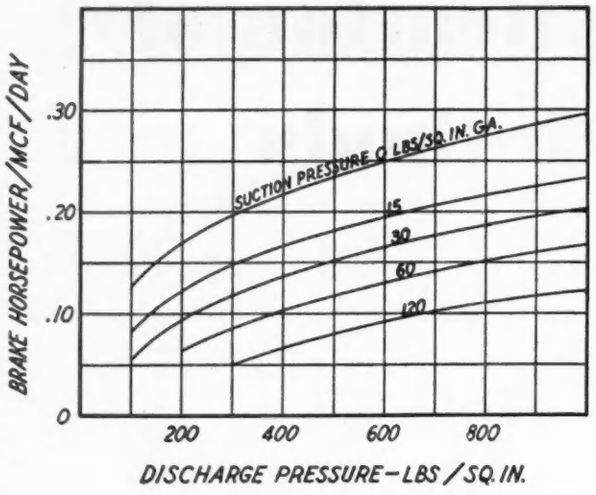


FIGURE 1
Power Required for Compressing Gas

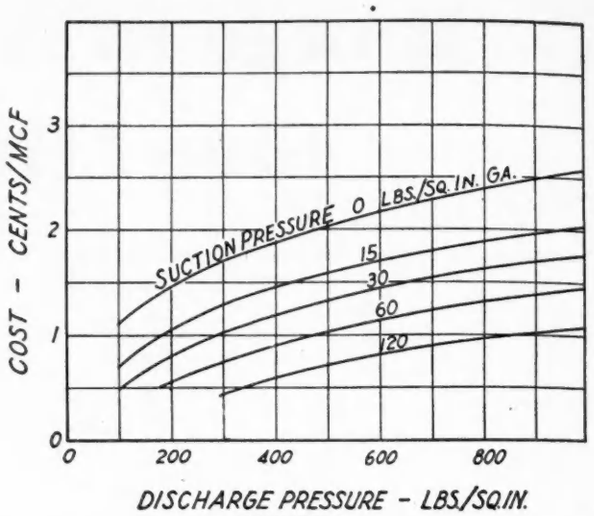


FIGURE 2
Cost of Compressing Gas (After Dunn)
2,000-horsepower plant; 10-year amortization period; cost of fuel at 5 cents per M.C.F. and water at 0.5 cents per horsepower-day have been added to Dunn's figures.

appreciable discrepancies between wells. In this investigation large volumes of data have been used in the hope that discrepancies and inaccuracies were of a random nature, and would be eliminated by averaging. The resulting relations may be inaccurate when applied to any particular well, but over a large number of wells they should provide satisfactory approximations.

Inasmuch as well performance is dependent upon both the well and the equipment characteristics, it is evident that an intelligent choice of producing equipment is impossible unless the well characteristics are known. A knowledge of the trends of these characteristics is helpful in estimating the useful life of a particular lifting method.

Economic Aspects—Cost of Compressing Gas

One of the chief items of expense in producing oil by gas lift is the cost of compressing gas, which is largely dependent upon the power required. The power consumption per M.C.F.* per day for various compressor suction and discharge pressures is shown in Figure 1. These data indicate clearly the desirability of maintaining compressor intake pressures at maximum.

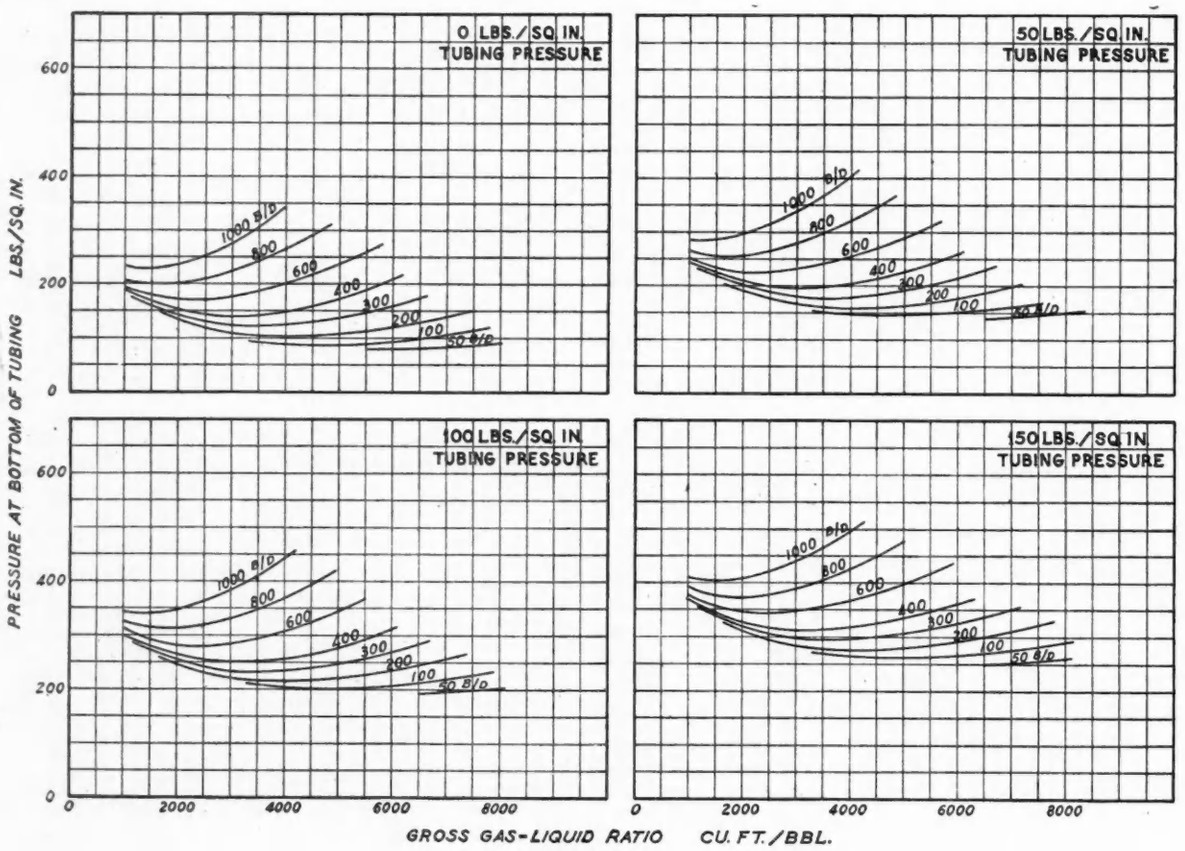


FIGURE 3
Performance of 2½-Inch Gas Lift at 3,000 Feet (Dominguez and Long Beach Data)

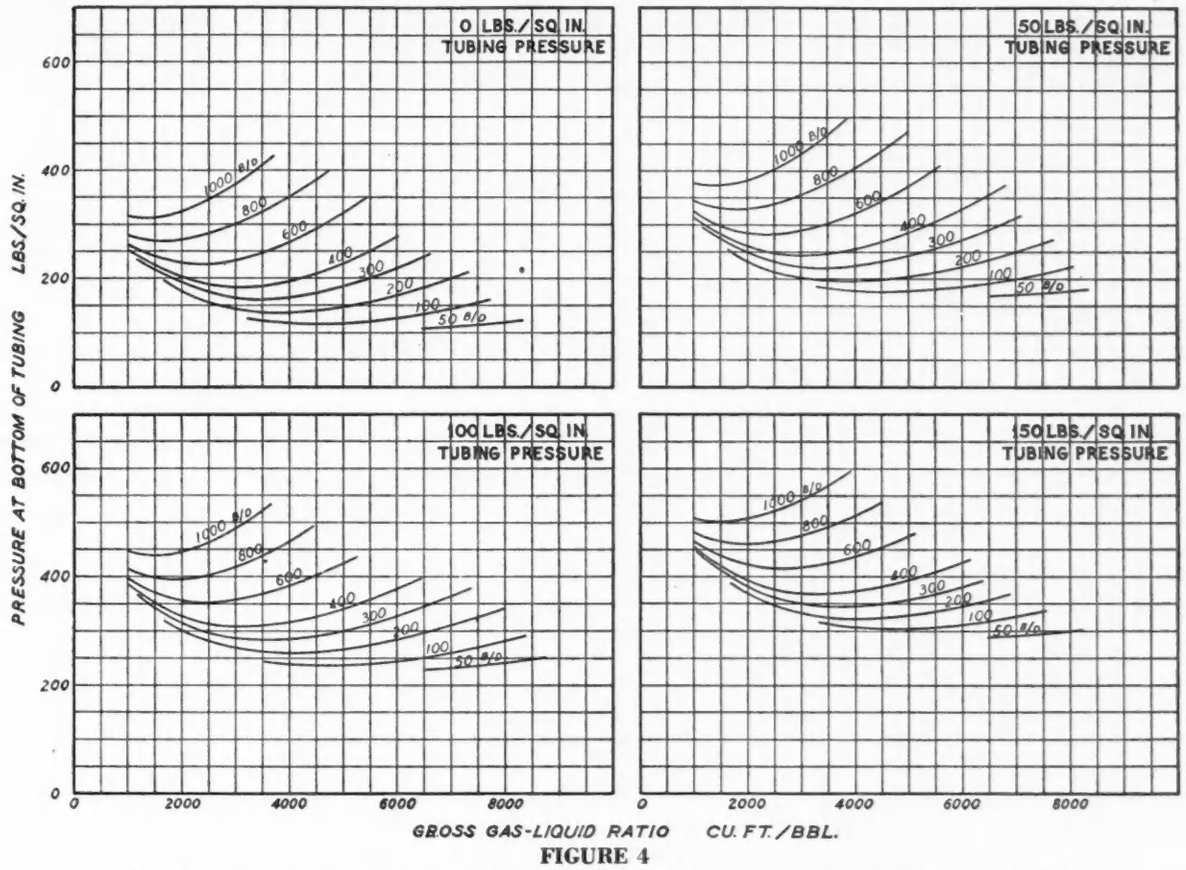


FIGURE 4

Performance of 2½-Inch Gas Lift at 4,000 Feet (Dominguez and Long Beach Data)

Gas-compression costs have been calculated from the data published by J. H. Dunn.[9] As fuel and water costs were omitted from Dunn's calculations, the cost of fuel gas at 5 cents per M.C.F. and water at 0.5 cents per horsepower-day have been added. The resultant compression cost is 8.7 cents per horsepower day for a 2,000-horsepower plant and a 10-year amortization period. When the power requirements shown in Figure 1 are multiplied by this value, the costs shown in Figure 2 are obtained. The compression costs for plants larger than 2,000 horsepower are the same as those shown in Figure 2, but the costs for smaller plants are higher. As the amortization period also affects the costs, a set of factors is given in Table 1 by which the costs shown in Figure 2 may be multiplied to give the costs for other plant sizes and amortization periods. These costs refer only to capacity operation of a compressor plant, because many contributing factors are not affected by variations in load.

Straight Gas Lift

Of the various gas-lift methods the straight gas lift by far has been used most extensively. If circulating gas is available, the cost of laying a pipe line from the circulating-gas manifold to the well is the principal installation expense. When a flowing well dies or begins to head, it is quicker and more convenient to use the straight gas lift than to install one of the other devices. In addition to the convenience and economy of installation, the straight gas lift has the inherent advantage of requiring no sub-surface mechanism which may be eroded by mud, sand, or scale; and a well in which the straight gas lift is applied properly may produce for years without interruption. This performance can be approached, but seldom is equalled, by other lifting methods. Furthermore, the formation gas is utilized in lifting the oil, thus decreasing the consumption of circulated gas. The chief disadvantages of the straight gas lift are a tendency toward serious emulsion trouble in wells producing from 20 to 70 percent water, and relatively low efficiency or effectiveness under most conditions.

TABLE 1

Correction Factors to Be Applied to Gas-Compression Cost Data Shown in Figure 2

Plant Capacity (Horsepower)	Amortization Period (Years)		
	5	10	15
500	1.71	1.41	1.31
1,000	1.40	1.16	1.08
1,500	1.23	1.02	0.95
2,000	1.21	1.00	0.93

Gas Lift Through 2½-Inch Tubing

Performance curves for straight gas lift through 2½-inch tubing were developed from 200 cases taken from production records of the Dominguez and Long Beach fields of California. The wells ranged in depth from 4,200 feet to 5,500 feet, and were producing oil with a gravity of approximately 30 deg. API, with less than 5 percent water. The pressures at the bottom of the tubing were estimated from the casing pressures by applying the following equation, which has been found to give satisfactory results in the Dominguez field:

$$P_B = (P_c + 15)\ (1 + 0.022h) - 15 \qquad (1)$$

Where:

P_B = pressure at the bottom of the tubing, lb. per sq. in.
P_c = casing pressure, lb. per sq. in.
h = tubing depth, thousands of feet.

These computed pressures then were corrected to

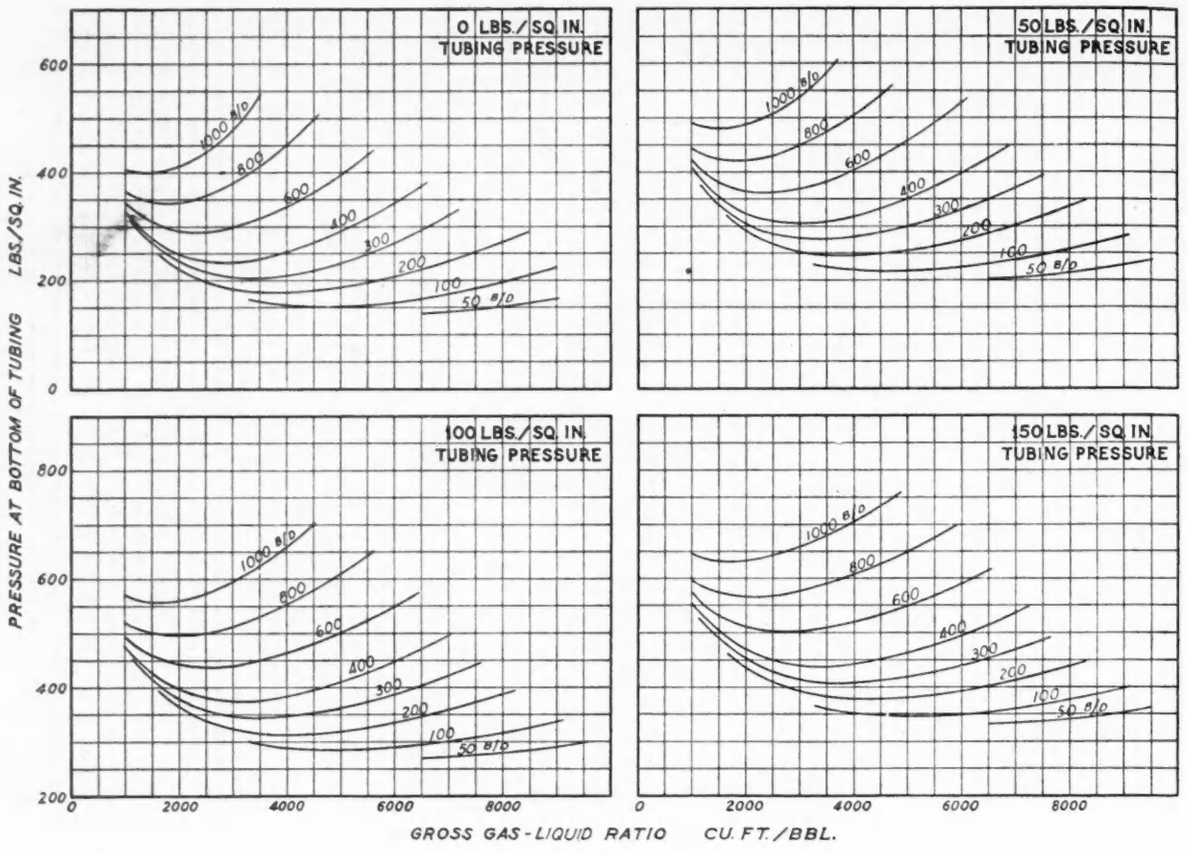


FIGURE 5
Performance of 2½-Inch Gas Lift at 5,000 Feet (Dominguez and Long Beach Data)

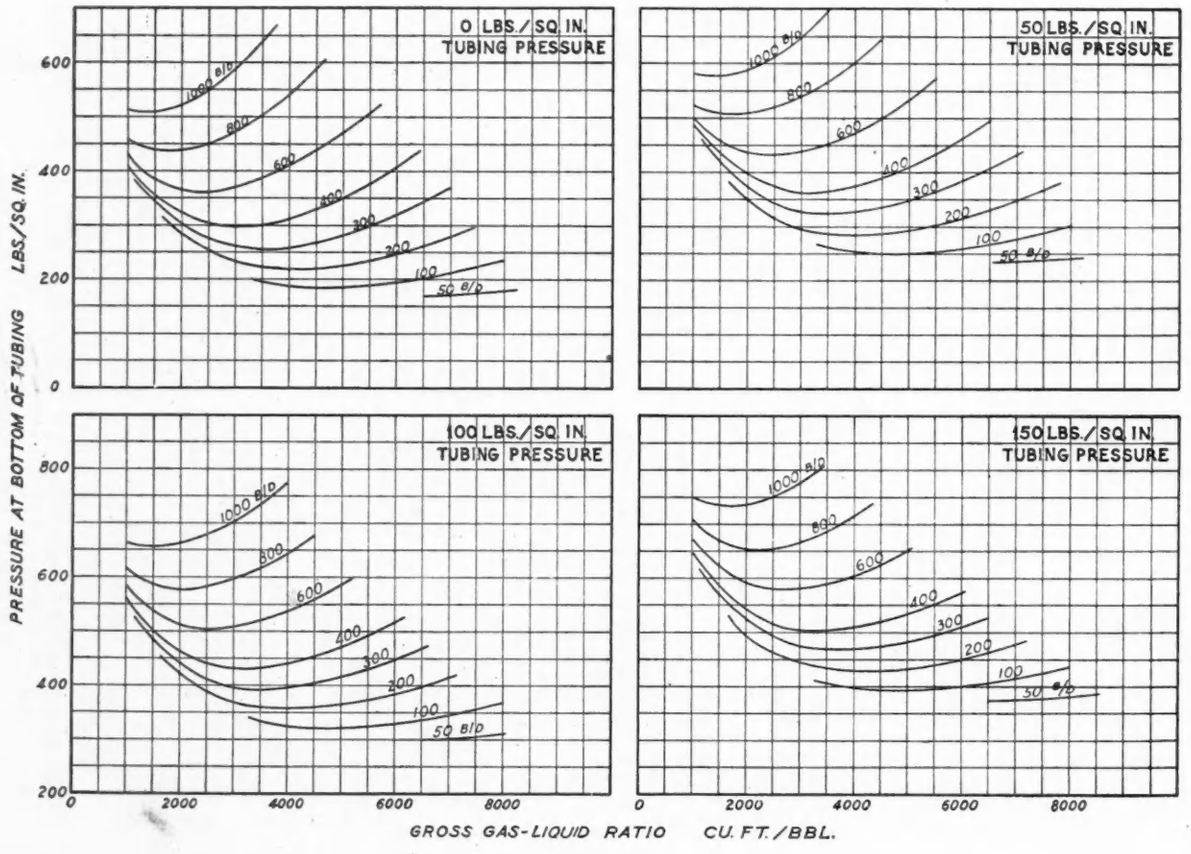


FIGURE 6
Performance of 2½-Inch Gas Lift at 6,000 Feet (Dominguez and Long Beach Data)

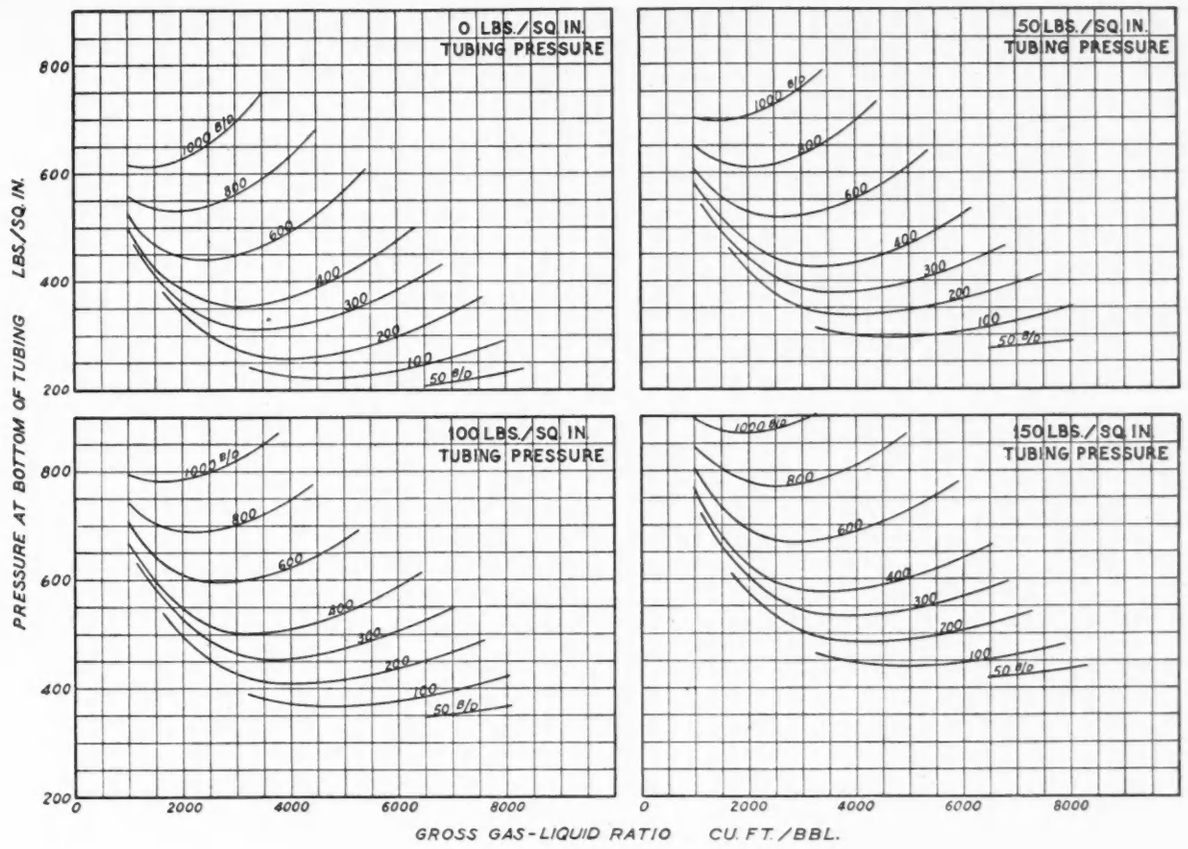


FIGURE 7

Performance of 2½-Inch Gas Lift at 7,000 Feet (Dominguez and Long Beach Data)

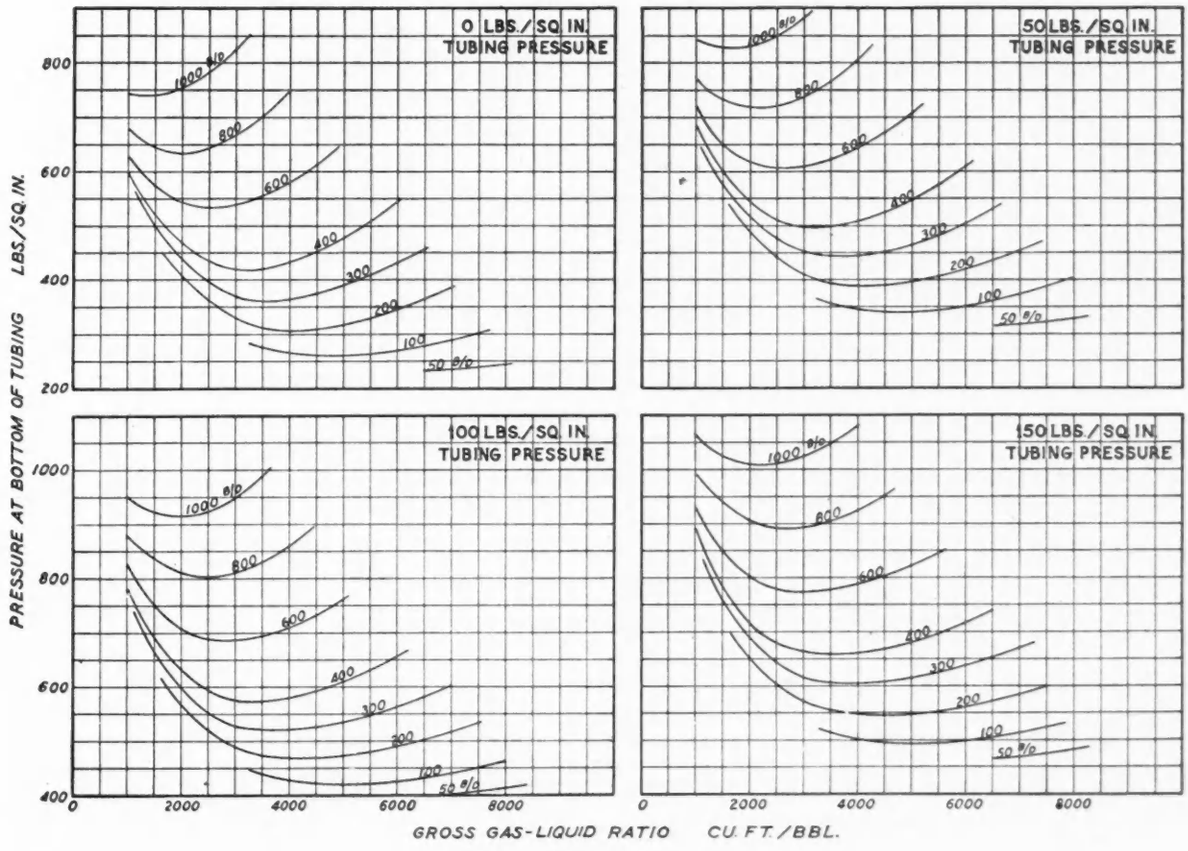


FIGURE 8

Performance of 2½-Inch Gas Lift at 8,000 Feet (Dominguez and Long Beach Data)

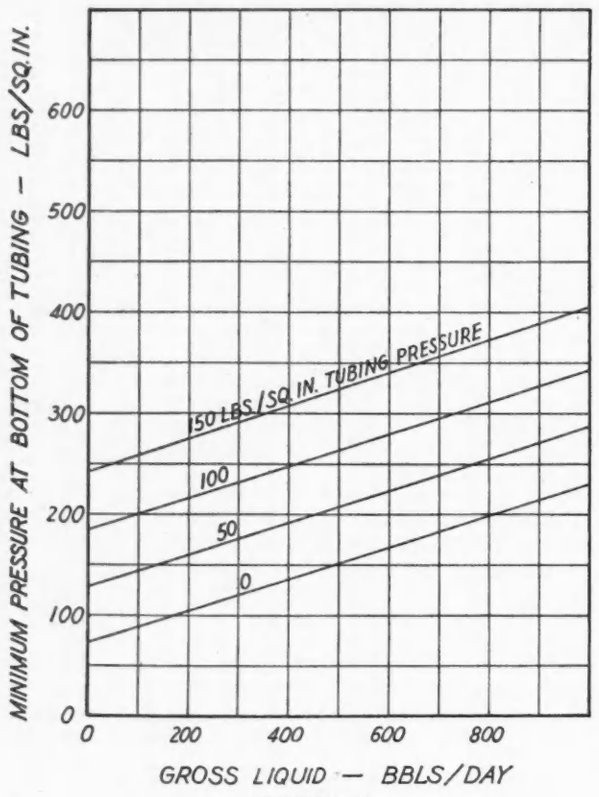


FIGURE 9

Minimum Pressures at Bottom of Tubing; 2½-Inch Gas Lift at 3,000 Feet (Dominguez and Long Beach Data).

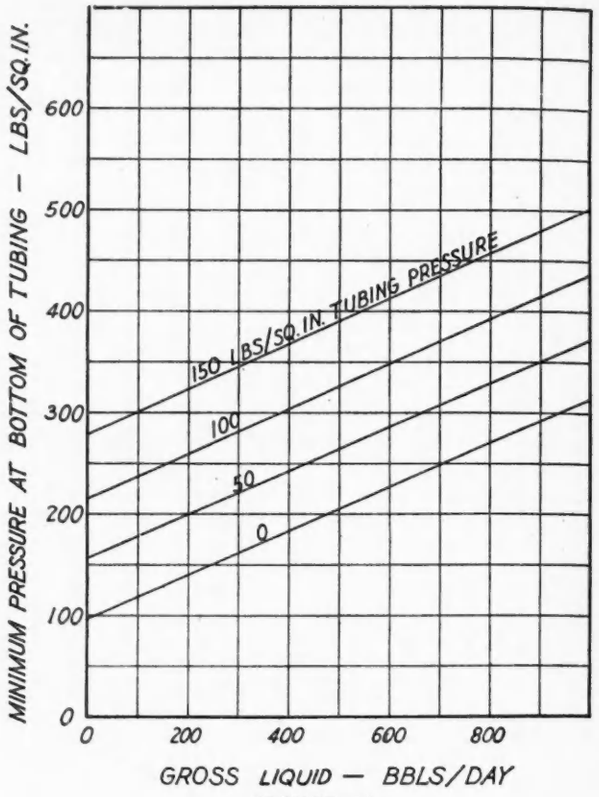


FIGURE 10

Minimum Pressures at Bottom of Tubing; 2½-Inch Gas Lift at 4,000 Feet (Dominguez and Long Beach Data).

a depth of 5,000 feet by the use of preliminary studies of pressure gradients. The corrections are small, and possible errors are well within the accuracy of the surface-pressure measurements. The data then were used to plot curves showing the relation between pressure at the bottom of the tubing and gross gas-liquid ratio for varying production rates and tubing pressures. After smoothing, the curves shown in Figure 5 were obtained.

As the data on 2½-inch gas lift at other depths were inadequate, it was assumed that the pressure at the bottom of a 10,000-foot well would be identical with the pressure at the bottom of two superimposed 5,000-foot wells—the tubing pressure of the upper well being equal to that of the 10,000-foot well, and the tubing pressure of the lower well being equal to the bottom tubing pressure of the upper well. In this manner pressure-depth relations were obtained, and curves similar to those shown in Figure 5 were plotted for depths ranging from 3,000 feet to 8,000 feet as shown in Figures 3 to 8, inclusive.

The above assumption is justified if the pressure drop across any short section of the tubing string is dependent solely upon the pressure at the bottom of the section and the rates of flow of oil and gas through the section, and is independent of the distance that the oil and gas may have flowed from the bottom of the tubing to the section in question. This hypothesis possibly may be incorrect, but it is implicit in all previous attempts at a solution of the flow problem.

In Figures 3 to 8, inclusive, the pressure at the bottom of the tubing is plotted against gross gas-liquid ratio for various rates of production, tubing pressures, and depths. These are the fundamental performance curves of 2½-inch tubing gas lift for Dominguez and Long Beach oil and gas. On these curves two points are of chief interest to the production engineer: the point of minimum pressure, and the point

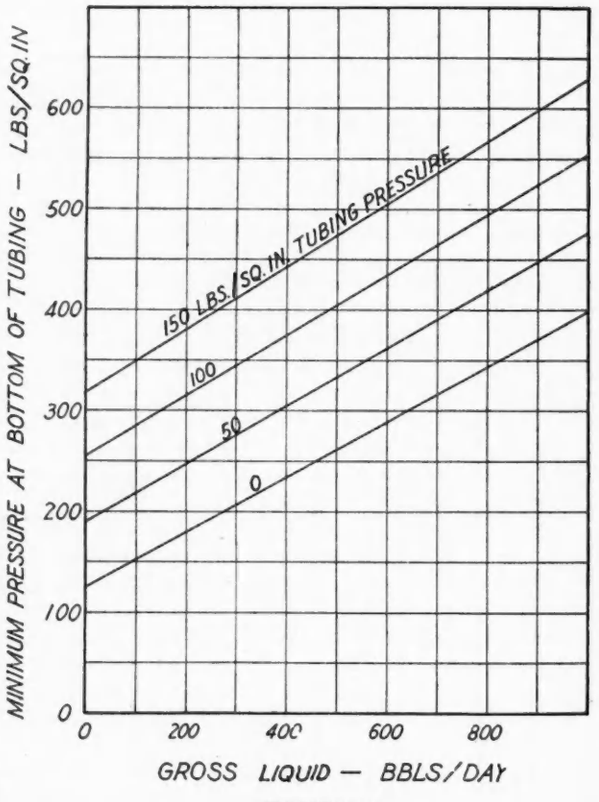


FIGURE 11

Minimum Pressures at Bottom of Tubing; 2½-Inch Gas Lift at 5,000 Feet (Dominguez and Long Beach Data).

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of minimum gas consumption. The desirable range of gross-gas-liquid ratios lies between these two points. Maximum production will be obtained at the point of minimum pressure. Increasing the circulated gas beyond this quantity will decrease, rather than increase, the oil-production rate, because the aerating effect of the additional gas will be nullified by the flow resistance caused by higher velocities. Maximum economy may be obtained at the point of minimum gas consumption. If the circulated gas is decreased beyond this point, the well usually will head severely or die.

The minimum pressure point can be established, at least approximately, from the curves; but the point of minimum gas consumption is difficult to obtain. An attempt to establish this value was made in the following manner: Data covering gas-lift operations at Dominguez for a period of several years were collected, and gross gas was plotted against gross liquid, as shown in Figure 16. The points form a wide band with a definite lower limit of approximately 325 M.C.F. per day for rates of production under 300 barrels per day. Although this critical point may be affected by depth, the writer has been unable to observe any significant differences in deeper wells. Davis[10] gives some data on the critical gas rates of wells at Santa Fe Springs. The data for wells producing less than 300 barrels per day through 2½-inch tubing are shown in Table 2. These wells are deeper than the majority of the Dominguez wells for which data are available.

The relation between pressure at the bottom of the tubing and rate of production under optimum conditions can be obtained by plotting the minimum pressures against the corresponding rates of production. Such curves are shown in Figures 9 to 14, inclusive, and the gas consumption corresponding to these conditions is shown in Figure 15.* In this latter illus-

[*Continued on page 35*]

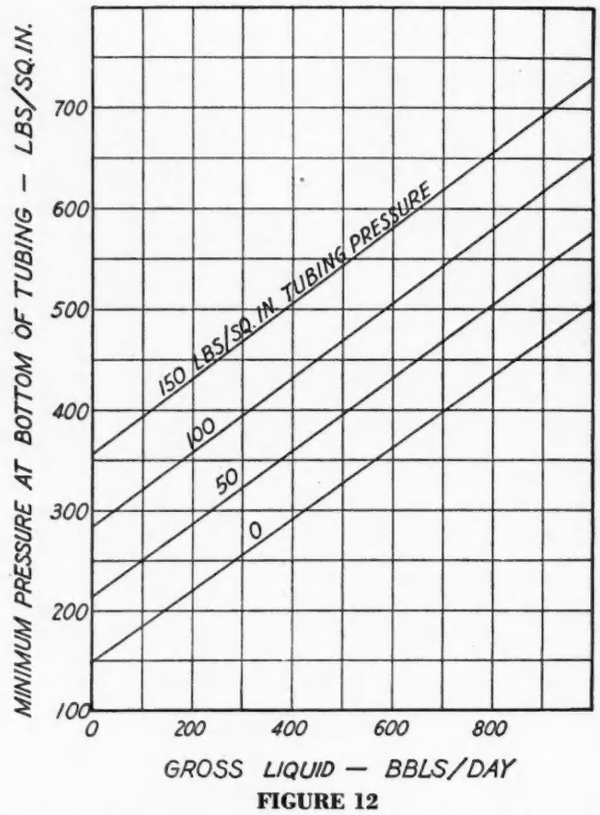

FIGURE 12

Minimum Pressures at Bottom of Tubing; 2½-Inch Gas Lift at 6,000 Feet (Dominguez and Long Beach Data).

* Because of the flatness of the basic curves in Fig. 3 to 8, inclusive, the gas-consumption curves of Fig. 15 should be considered as approximations.

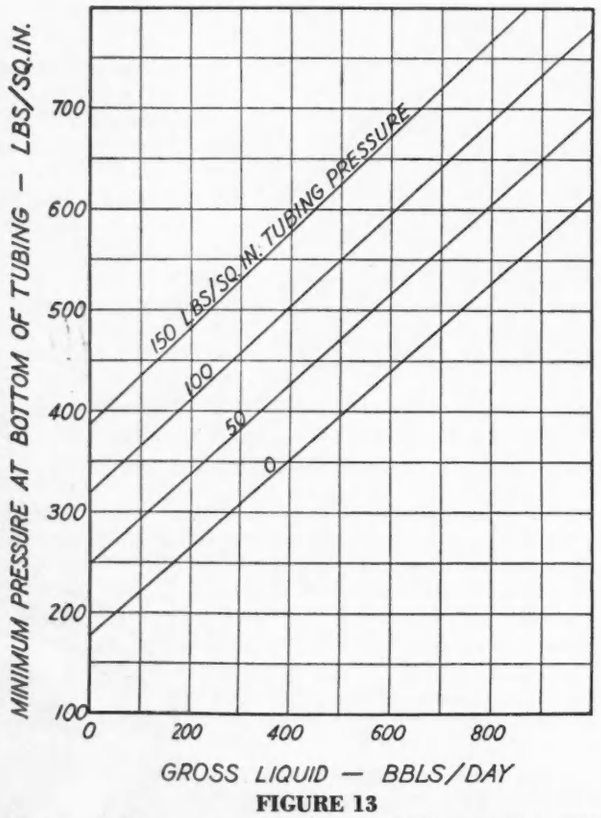

FIGURE 13

Minimum Pressures at Bottom of Tubing; 2½-Inch Gas Lift at 7,000 Feet (Dominguez and Long Beach Data).

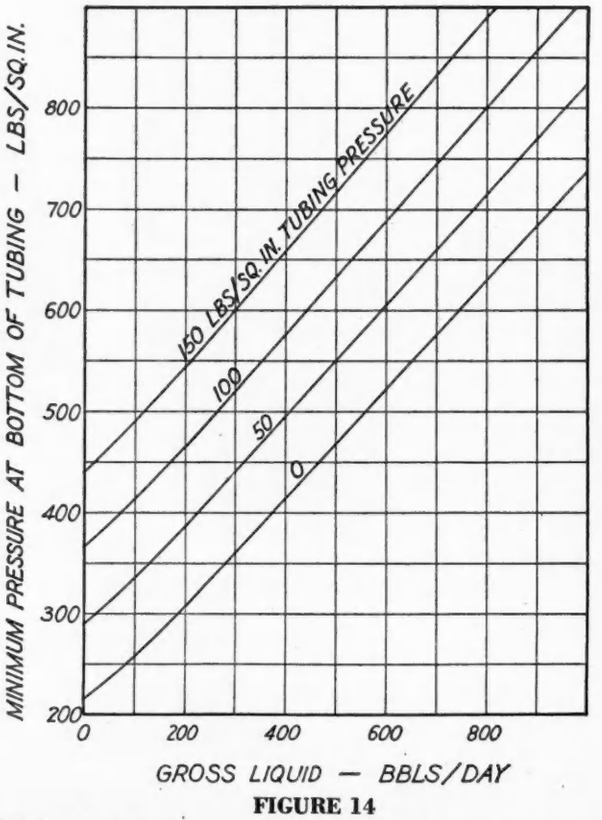

FIGURE 14

Minimum Pressures at Bottom of Tubing; 2½-Inch Gas Lift at 8,000 Feet (Dominguez and Long Beach Data).

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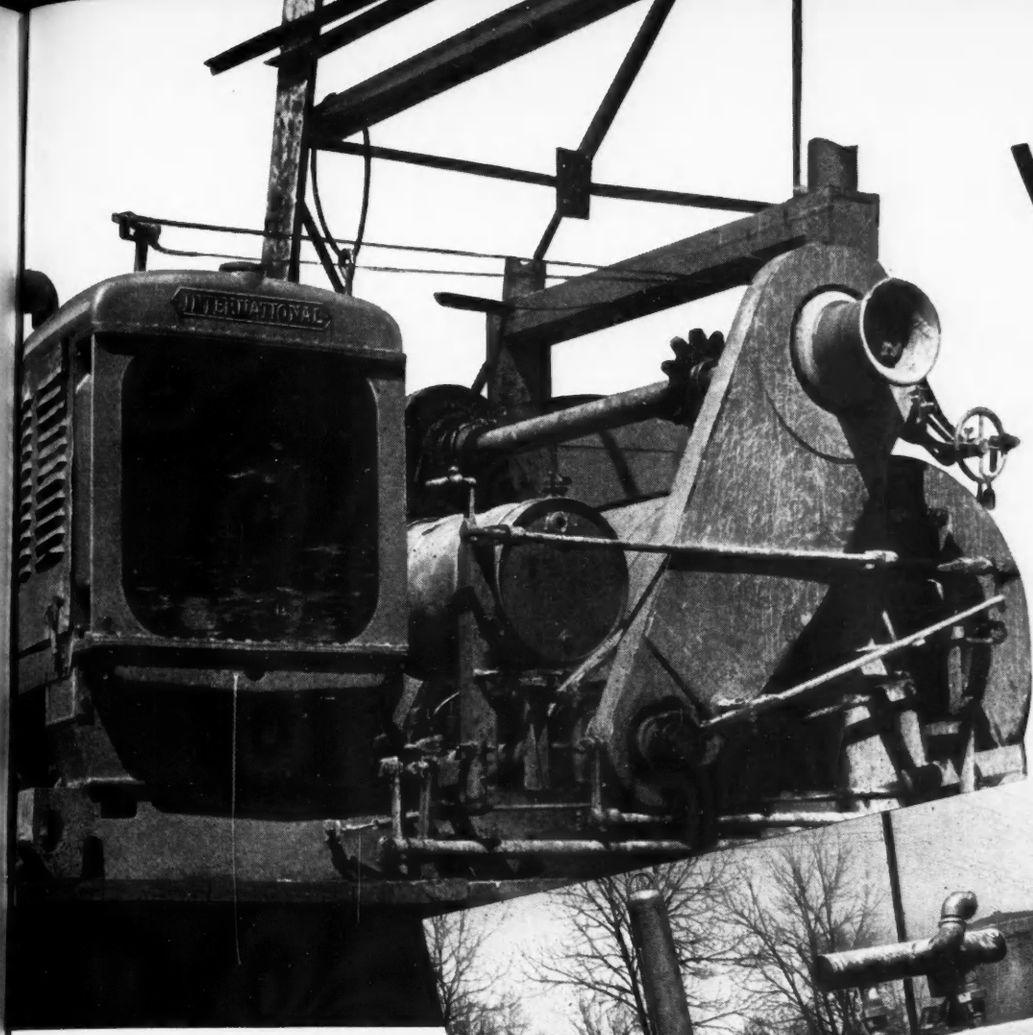

: An International PA-100 Power Unit, operating
lane, driving a portable rig in the Louden field in
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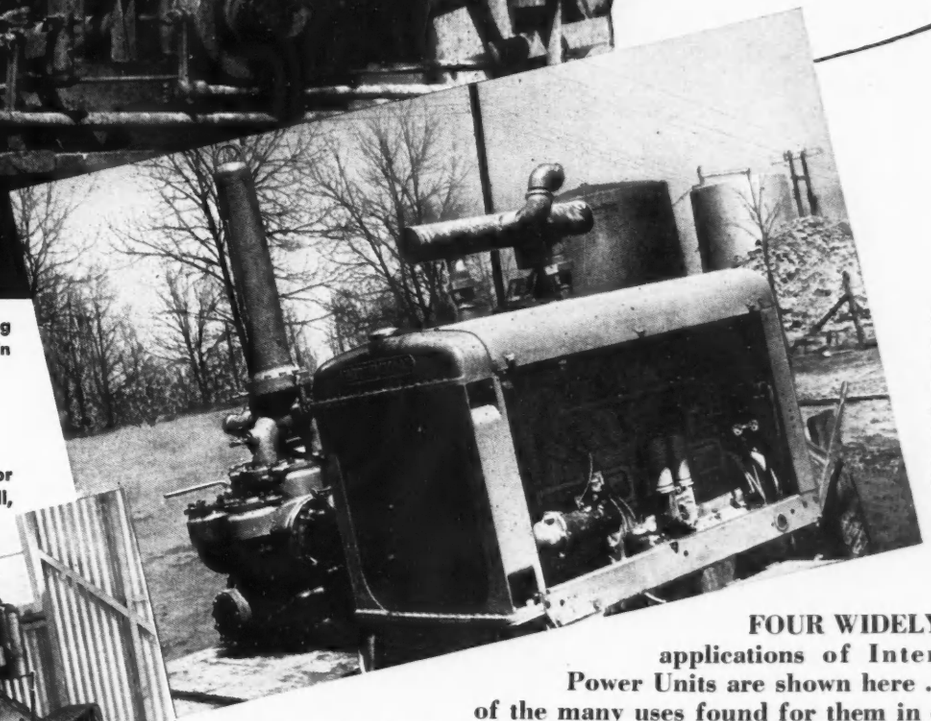
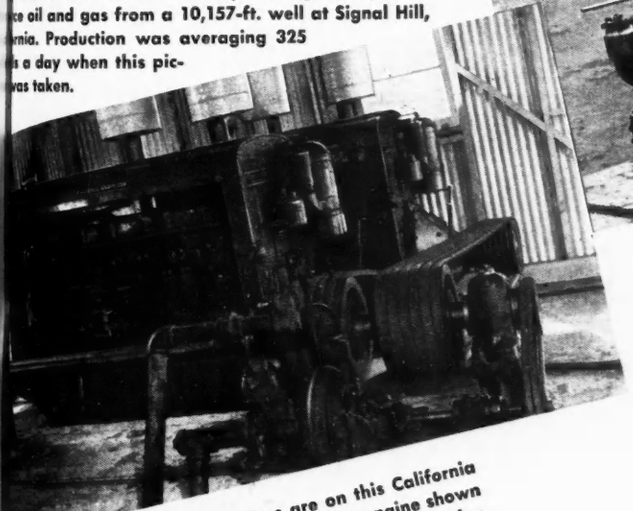


Left: Another International PA-100, using butane as fuel, hooked up to the slush pump by the Haynes and Thomas Drilling Corp., Salem, Ill.

: Two International PA-100's powering a compressor
e oil and gas from a 10,157-ft. well at Signal Hill,
rnia. Production was averaging 325
s a day when this pic-
as taken.



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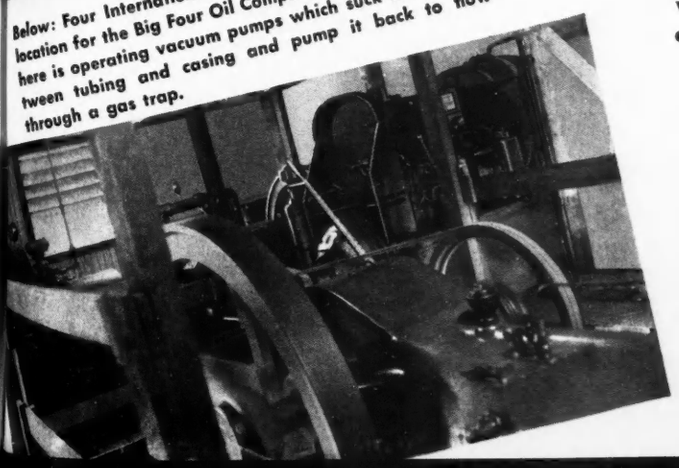
Below: Four International Engines are on this California
location for the Big Four Oil Company. The engine shown
here is operating vacuum pumps which suck the gas be-
tween tubing and casing and pump it back to flow
through a gas trap.



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Cooperative Problems Involved In Cathodic Protection

By L. F. SCHERER
The Texas Pipe Line Company

THIS article, which is published here in somewhat abstracted form, was presented before the Twentieth Annual Meeting of the American Petroleum Institute in Chicago, November 16, 1939.

The paper is a summation of the early history of cathodic protection in its application to the pipeline industry. The organization of the Mid Continent Cathodic Protection Association—together with its aims, purposes, accomplishments, and limitations—is discussed in some detail. Data presented show the details of the application of this form of protection to the petroleum industry, and indicate clearly its rapid growth within the past few years.

Many of the serious problems now confronting the cathodic engineer are discussed in detail. The eminent hazards of liability and involvement are pointed out, with a plea that they be given consideration.

The rapid increase in recognition, and the general use of this form of protection, clearly indicate that the mutual problems arising soon will reach the point where they can no longer be handled amicably through individual agreement. Because of the tremendous liabilities which may be created through lack of understanding, good practice, or standardization, the directed control of this work soon may become a serious concern of the entire industry.

It is suggested that, in its capacity as clearing house on problems of mutual concern to the petroleum industry, the American Petroleum Institute peculiarly is suited to act as the medium through which this rapidly-growing technological work may be organized and studied.

The statements and opinions expressed herein are those of the author, and should not be construed as an official action or opinion of the Institute or of this magazine.

STATED simply, cathodic protection is a method of preventing electrolytic corrosion by raising the potential of the soil above that of the pipe line to be protected by an amount sufficient to inhibit discharge of current to the soil; in other words, the pipe line is made cathodic.

The use of cathodic protection in mitigating electrolytic corrosion is not new, patents having been issued on certain applications as early as 1908[1]. Much of the early electrolysis work was based upon stray-current losses, usually from electric street railways. The cathodic condition, however, was recognized during the period 1911 to 1916, and at least two successful

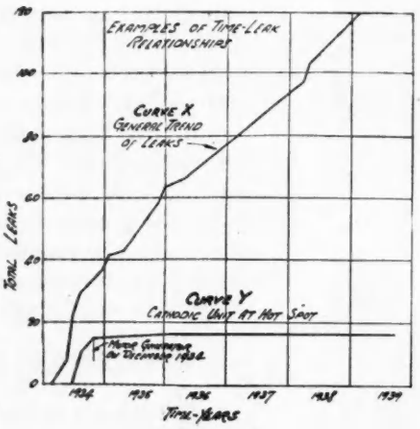

FIGURE 1

Curves Showing Time-Leak Relationship between Line Having No Cathodic Protection and Cathodically-protected Line

cathodic units were installed during that period[2].

Work conducted by the National Bureau of Standards prior to 1918[3] indicated the feasibility of using motor-generator sets for cathodic units. In Technologic Paper 52, the need of regulation regarding electrolytic mitigation was stressed, and it was suggested that joint action between interested parties be sponsored by the American Committee on Electrolysis[4].

Records indicate that the first successful installation made on a gas or oil line purely for the purpose of mitigating electrolytic corrosion was installed on a gas pipe line in Texas in 1932 by Starr Thayer, who had been independent-

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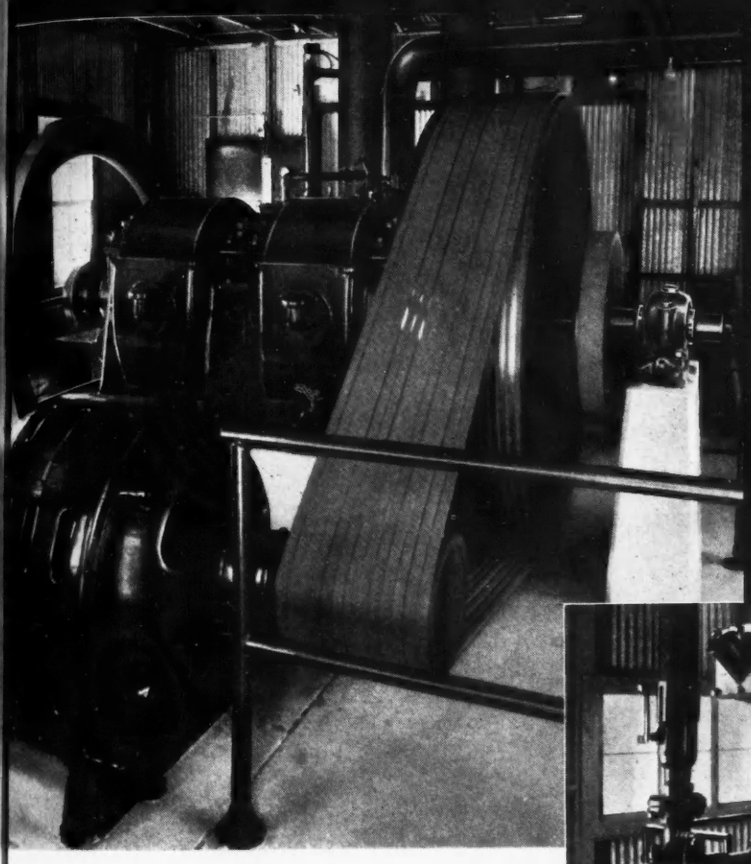

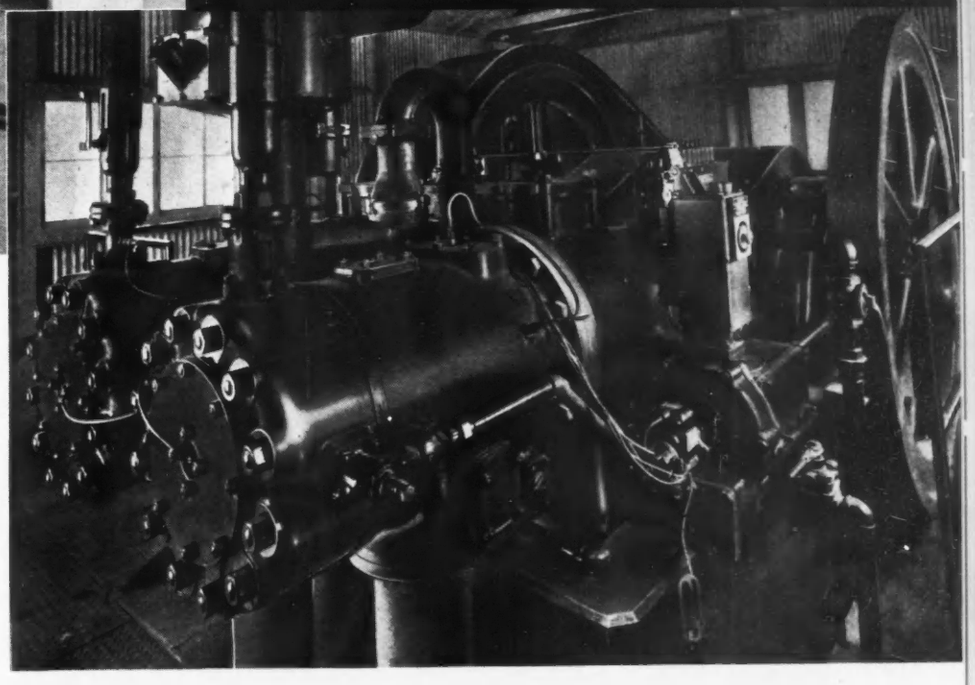

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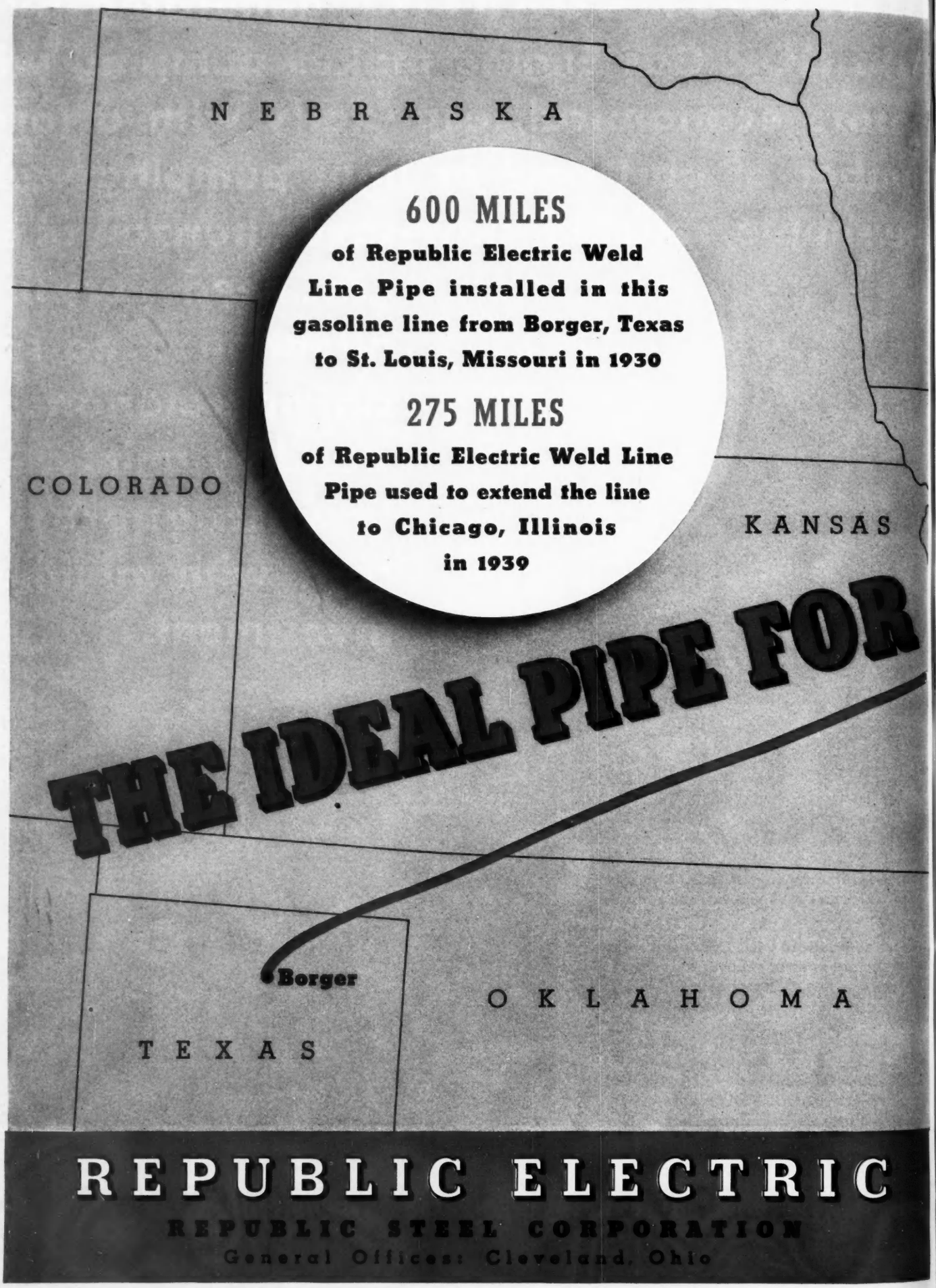
NEBRASKA
600 MILES
of Republic Electric Weld Line Pipe installed in this gasoline line from Borger, Texas to St. Louis, Missouri in 1930
275 MILES
of Republic Electric Weld Line Pipe used to extend the line to Chicago, Illinois in 1939
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KANSAS
THE IDEAL PIPE FOR
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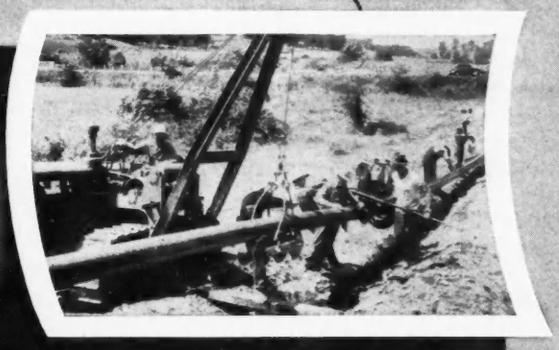

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Lengths average over 50 ft.

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2 **No Scale (Pickled and Sand-blasted Plates)**

3 **Uniform Wall**

4 **Fifty ft. Lengths**

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WELD LINE PIPE

TRUSCON STEEL COMPANY · NILES STEEL PRODUCTS DIVISION · BERGER MANUFACTURING DIVISION

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ly active in the pipe-protection and corrosion field for some time previous. The results of that installation pointed the way by showing that such installations were both practical and economical. Experimental work proceeded slowly until 1934. Since then advancement has been rapid.

Time-Leak Relationships

A study of Figure 1 shows clearly the efficacy of cathodic protection applied to a pipe line. Curve **X** is a typical record of cumulative leaks as recorded for an 8-inch pipe line without cathodic protection. Curve **Y** is the record of a similar line upon which cathodic protection was applied. The trend before application of protection was similar to that of the unprotected line.

The mechanical application of cathodic protection consists of applying a source of potential between the pipe line and a suitable ground bed buried in the soil at a point some distance from the pipe line. The negative lead is connected to the pipe line, and the positive lead is connected to the ground bed. The source of potential may be a battery, motor-generator set, rectifier, windmill, or engine-powered generator.

Types of Equipment

Due to the relatively-recent application of cathodic protection to the industry, and because much of the work is conducted by individuals and is of an experimental nature, the diversity in types of equipment is tremendous — being limited only by the ingenuity of the engineers and the availability of mechanical combinations.

The improvement in mechanical design and construction of cathodic units has been tremendous during the past five years. This was not due to any concerted or organized action, however; but, rather, the result of intensive application on the part of a few individuals. There is still much room for improvement in the reliability and efficiency of these units, but to accomplish this expeditiously and economically requires standardization of requirements and unified action by the industry.

TABLE 1
Total Number of Units

GROUP (Number of Units)	Number of Companies	Total Units in Group
1-5	7	11
6-10	7	55
11-15	2	22
16-20	4	72
21-25	1	23
26-30	2	55
More than 30	3	304
Totals	26	542

TABLE 2
Number of Miles of Pipe Protected

GROUP (Number of Miles)	Number of Companies	Miles in Each Group
1- 25	13	172
26- 50	2	56
51- 75	4	225
76-100	2	163
101-125	..	...
126-150	..	...
151-175	1	170
176-200	1	195
More than 200	3	1,025
Totals	26	2,006

TABLE 3
Rectifiers
Range 80 to 1,500 Watts

Group (Number of Units)	Number of Companies	Units In Group
1- 5	11	20
6-10	..	..
11-15	2	24
16-20	1	16
21-25	..	..
26-30	1	26
More than 30	1	65
Totals	16	151

TABLE 4
Motor Generators
Range, ¼ to 7.5 Kilowatts

GROUP (Number of Units)	Number of Companies	Units in Group
1- 5	6	17
6-10	2	16
11-15	..	..
16-20	2	35
Totals	10	68

TABLE 5
Windmills
Range, 200 to 1,600 Watts

GROUP (Number of Units)	Number of Companies	Units in Group
1- 5	15	35
6-10	6	40
11-15	..	..
16-20	2	35
21-25	1	22
More than 25	1	96
Totals	25	228

TABLE 6
Gas or Gasoline Engines
Range, 0.4 to 4 Kilowatts

GROUP (Number of Units)	Number of Companies	Units in Group
1- 5	4	7
6-10	1	6
11-15	1	15
17-20	..	..
21-25	..	..
More than 25	1	67
Totals	7	95

Extent of Cathodic Protection

The Mid-Continent Cathodic Protection Association recently conducted a questionnaire survey with the object of determining the extent to which cathodic protection is applied to pipe lines as well as certain factors pertaining thereto. Sixty-seven companies were contacted, and replies were received from 42 of them. The results of this investigation are shown in Tables 1 to 8, inclusive. Groupings were made on the basis of the number of units in use by the individual companies.

Although it is realized that all users were not contacted, it is felt that the above figures include the majority of the units in operation, and are sufficiently inclusive to show representative results. It is evident that two or three companies have applied cathodic protection extensively. These organizations report approximately 50 percent of the units installed, and show approximately the same percentage of total miles of pipe protected.

At least half of the companies reporting are within the lowest two groups. This would seem to indicate that they are just beginning to apply cathodic protection, or are in the experimental stage. Much time and expense could be saved these companies through standardization, education and cooperation.

The tremendous interest in the application of cathodic protection was brought out by the large number of requests (by present nonusers) for general as well as specific information. In addition to the installations tabulated, it was indi-

TABLE 7
Number of Bonds to Foreign Lines

GROUP (Number of Bonds)	Number of Companies	Number of Bonds
1-10	13	79
11-20	3	46
21-30	..	..
More than 30	2	257
Totals	18	382

TABLE 8
Proportion of Various Type Units

	Number In Use	Percent
Rectifiers	151	27.9
Motor Generators	68	12.5
Windmills	228	42.1
Engine-powered	95	17.5
Totals	542	100.0

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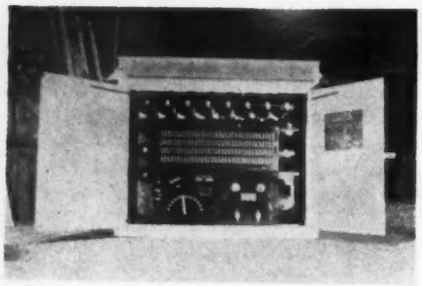

FIGURE 2
Alternating-Current Converter (Rectifier)

cated that approximately 75 additional installations are contemplated before the end of the current year.

Committee Formation

By 1934 the increased interest in this type of corrosion mitigation had begun to show the need of joint action in cases of involvement. The matter was brought to a head by the difficulties being experienced by pipe line companies in the area east and southeast of Chicago. This area is highly industrialized and congested. Pipe lines, underground telephone and telegraph cables, utility services, street car lines, and electrified-railway crossings—with interchanging current and all owned by different interests—presented a difficult problem for solution.

A committee composed of representatives of the involved interests was formed. This committee drafted a test procedure, and conducted a joint survey of all structures. This voluntary organization, through cooperation and discussion of their joint problems, was successful in definitely reducing electrolytic damage in this area. It clearly pointed the way to the need of a permanent organization to deal specifically with the problems involved in electrolytic-mitigation work. Such an organization would be at once a clearing house for essential information and advice in joint involvement, and would serve as a means of disseminating data pertinent to industry.

With this object in mind and realizing that the problems of initial responsibility rapidly were becoming involved, a group of interested pipe line engineers met in April, 1936, to discuss the feasibility of forming such an organization. Their subsequent discussions resulted in a called meeting of representatives of all interested pipe line companies, and at this meeting the Mid-Continent Cathodic Protection Association was formed.

Membership in the organization is voluntary, and no assessments are made—expenses being carried on by the organizations of those members most active in mitigation work. Its aims are primarily to act as a clearing house in cases of joint involvement, to meet as a group to permit free discussion of the many problems arising, and to act as a means of disseminating information on electrolytic mitigation to all interested parties. In these aims it has been sufficiently successful to prove conclusively to the industry as a whole that a properly-financed organization, with a recognized background and dealing specifically with the problems pertinent to electrolytic mitigation, is definitely necessary to the organized advancement of this phase of the pipe line industry.

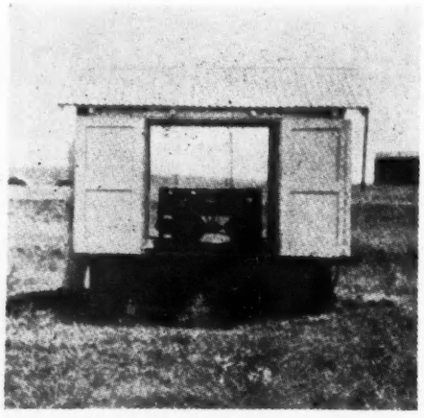

FIGURE 3
Motor-Generator Unit Installation

Under the present state of affairs it is frequently difficult to convince one party in a joint problem of his initial responsibility. No rules nor regulations have been laid down. Because it is possible that liability be created through the application of cathodic protection, it is highly desirable to keep the subject free from legal entanglements—particularly so because of the technical and specialized nature of the subject. The Mid-Continent Cathodic Protection Association, having a purely voluntary membership, lacks authority or prestige to act in matters of arbitration or to establish rules of procedure other than such ethics as may be established by its individual members.

Electrolytic Problems

In order that a better understanding may be had of some of the problems which now plague electrolysis engineers, it may be well to cite and discuss them here.

One of the major issues, as mentioned previously, is that of establishing initial responsibility in the solution of a problem involving two or more pipe lines. This may occur in the case of parallel, or crossing lines and, most frequently, in bonding work. Ordinarily these problems may be adjusted readily by the field men when only a few lines are involved. When numerous lines and faciilties are involved, arbitration is usually successful. Instances of an arbitrary attitude on the part of individuals so far have been gratifyingly infrequent. It is entirely conceivable, however, that some pipe line may become gravely liable and become involved legally in the future. It is this contingency against which we must guard by establishing precedents and rules of procedure.

Form of Notification

In this connection it must be pointed out that one of the cardinal requirements is the establishment of a required form of notification of intent which the initiating carrier must follow in advising others who may be involved. The Mid-Continent Cathodic Protective Association has developed such a form, but lacks the prestige to obtain its general use. For use with this form, it has worked up an index showing the pipe lines in each county of the Mid-Continent area. (Appendix "B.")

Adequate Records

Properly to conduct an electrolytic-mitigation program, it is essential that each company maintain a complete set of records showing a maintained history of its lines, its cathodic units, ground beds, etc. At present there is no standardized method by which this information is kept. Records kept in some uni-

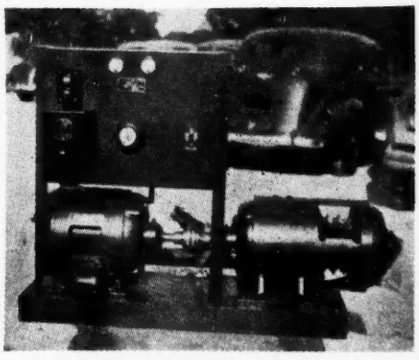

FIGURE 4
Cathodic Motor-Generator Set

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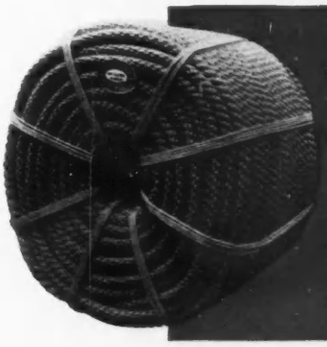

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form manner greatly would facilitate the exchange of information between carriers, and no doubt would result in economies in the pursuit of each company's program. It has been suggested, for instance, that when "miles of pipe protected" are discussed, the pipe in question be reduced to terms of "equivalent 12-inch pipe." Many worthwhile suggestions in regard to the above are embodied in a paper[5] presented before the May meeting of the Mid-Continent Cathodic Protection Association.

Clearing House

A body which would act as the medium through which could be passed information regarding new equipment and units would be most helpful. Such an organization would assist in establishing standards of uniformity and reliability which undoubtedly would result in appreciable economies to both consumer and manufacturer. The variety of ranges and combination of units now available on the market is almost unbelievable. The economies of standardization are obvious.

Measuring Devices

Almost every engineer has his own ideas as to the type of instruments he feels most suitable for his survey work. Because he is interested primarily only in comparative readings, he is reasonably safe so long as his instruments retain a fair degree of accuracy. When discussing his problems with another engineer or when conducting a joint survey, it is highly probable that appreciable discrepancies will develop. There is a definite need, therefore, for a comprehensive and organized study of measuring devices and methods as applied to electrolysis work.

Ground Beds

Properly-designed ground beds of reasonably-low resistance are one of the major problems confronting the cathodic-protection engineer. It is doubtful whether two identical ground beds could be found among the 542 or more

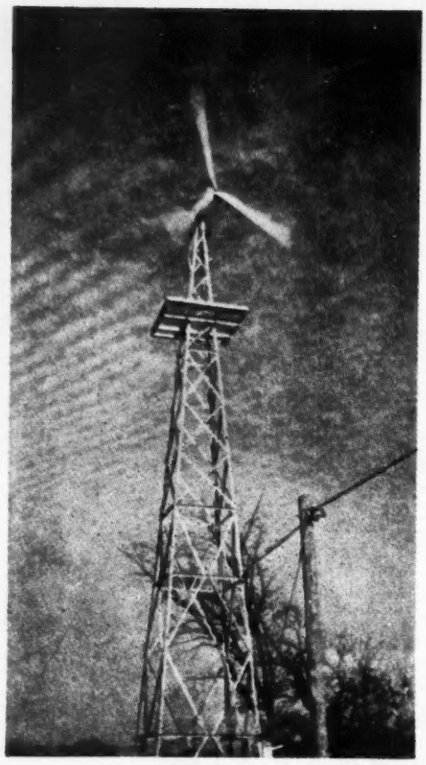

FIGURE 5
Wind-Power Generator Installation

listed. Although it is admitted that identical or even standardized ground beds are not desirable, it must be admitted that an intensive study of ground-bed locations, forms, methods of installation, and efficiencies is highly desirable. There is little doubt that many of the now-existent cathodic installations are affected adversely by their ground-bed installation. An organized study and exchange of information cleared through a suitable group would produce worthwhile results.

Parallel and Crossing Lines

The handling of the manifold problems involved through the joint survey of parallel or crossing pipe lines, or an involvement with other facilities, could be facilitated greatly by organizing the work in such a way on such a basis as would provide an incentive for each company to cooperate and include a standard and efficient procedure. Herein would be involved the standardization of instruments, procedure, terminology, etc., which would be essential to the full understanding of results and recommendations of all involved parties. Such cases are bound to become more and more frequent, and it is well to consider now how they best may be handled.

Bonding

Table 7 indicates clearly to what extent bonding of crossing lines already is practiced. Because of the grave possibility of serious damage accruing, or allegedly accruing, to one or possibly both lines, and because of the possibility that this would result in legal involvement, bonding practice becomes one of the most serious problems a cathodic engineer must face. The multiplicity of possible conditions arising at a point of bonding hardly can be discussed here; they are, however, all too familiar to the electrolysis engineer. Suffice it to say that there is a definite need for a thorough study of the phenomena resulting from the bonding together of two or more lines. Surely an understanding of the possibilities, not to say responsibilities, would result in some standardization of procedure—with the likelihood that unpleasant legal involvement would be eliminated.

Insulating Flanges

Flanges of high di-electric strength, called "insulating flanges," are used frequently in cathodic work to isolate electrically one system from another, or part of a system from the whole. Several companies have evolved their own design for this service, and such designs or their methods of installation are not mutually acceptable. It would be a relatively simple matter to agree upon a standard design and basic method of installation, provided this could be passed upon by an authoritative group.

Joint Installations

Joint installations of cathodic units between companies having mutually-involved facilities are becoming more frequent. Satisfactory arrangements as to division of installation, maintenance, and operating costs have been made; but there always has been a question as to whether the arrangements were entirely equal. Should the division of installation cost, or the operating cost, be made on the basis of individual amperage con-

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sumed or upon that of equivalent miles of pipe protected; or would some other arrangement be more fair? The bogy of entangling alliances is always present. An impartial analysis by a competent group should help to clear up many points on this problem.

Bibliography

Early in its organization the Mid-Continent Cathodic Protection Association felt the need and desire of the industry for a fuller understanding of the entire problem of cathodic protection. It was handicapped by the lack of availability of concrete information, as well as by a lack of funds properly to disseminate the information available. It was felt that joint discussions would be most helpful; but, as the work and expense of organizing such meetings fell to the lot of only a few representatives, such meetings of necessity were curtailed. Through the efforts of a few individuals, the association was able to compile and distribute a fairly-complete bibliography.

Many favorable comments have been received on this effort, and it is felt that the work should be expanded and maintained. Surely healthy publicity and the wide dissemination of the knowledge and works on this subject must redound to the benefit of all.

Terminology

A universal terminology is of inestimable value in the free discussion of any technical subject. The recognition of cathodic work in the field already has resulted in such gems as "termite" for the electrolysis engineer, and "rust pump" for a cathodic unit; but among the engineers themselves there is still some lack of uniformity as to the technical description of the state of the facilities.

Variations in the meaning of pipe to soil potentials may be expressed confusingly due to using different reference electrodes or by using the net-potential reading instead of the full-potential reading. The resistance of two meters used in taking comparable readings may be different; the position of the electrode with respect to the pipe may have varied materially. Such differences readily may lead to misunderstandings during discussions. It would not be a difficult matter for a suitable committee to investigate, discuss, and publish a bulletin establishing a universal terminology.

The protection of pipe lines by means of cathodic units is not just a theory—it is a successful practice of at least 26 companies. More than 2000 miles of pipe and hundreds of steel storage tanks now are protected in this manner.

Conclusion

There is little doubt that this means of protection would be used by many more operators—especially the smaller ones, who have no corrosion engineer—if they were certain of what they were doing. The industry has wasted much money on this work in the past, due primarily to lack of adequate information and because of duplication of experiments. It should be protected from more needless expenditure.

These problems of electrolysis surveying and cathodic protection of underground structures are concerned intimately with the maintenance of continuity of pipe line transportation service. Any effort expended toward improving the efficiency and dependability of this branch of the petroleum industry would seem properly to be a concern of the American Petroleum Institute.

The rapid increase in recognition and general use of this form of protection indicates clearly that the mutual problems arising soon will reach the point where they can no longer be handled amicably through individual agreement. The promiscuous use of this protection, especially when multiple lines are involved, very easily can create a hazard. Because of the tremendous liabilities which may be created through lack of understanding, good practice, or standardization, the adequate administration of this work soon may become a serious concern of the entire industry.

In its capacity as clearing house on problems of mutual concern to the petroleum industry, the American Petroleum Institute peculiarly is suited to act as the medium through which this rapidly-growing technological work may be organized and studied. Certainly the resources and manpower available through the Institute place it in a far better position to investigate this entire matter—more particularly the technical and practical problems involved such as standard terminology, recommended standards on methods and equipment, and the many kindred problems—than would be possible through any other institution.

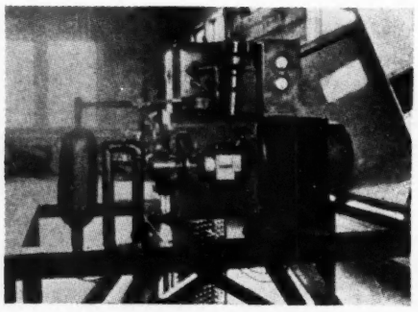

FIGURE 6
Gas-engined Generator Set

References

[1] German Imperial Patent 211,612, issued to Herman Geppert, July 9, 1909, covers from March 27, 1908.

[2] Prof. Albert F. Ganz installed M. G. set on gas main, New York; Sexaur on Western Union Cables at Galveston, 1912.

[3] *Natl. Bureau of Standards Technologic Paper 52.*

[4] Discontinued during period of World War.

[5] Frank E Hangs, "Maintain System of Records to Combat Pipe-Line Corrosion," *Oil Gas J.* 37 [50] 25 (1939).

[*Continued from page 22*]

tration gross gas has been plotted, rather than gross gas-liquid ratio, because this method of plotting brings out the essential features of the curves more clearly. The curves flatten at the lower end, because they have been made arbitrarily to intersect the axis of ordinates at 325 M.C.F. per day. Excessive flow resistance, resulting from the high rates of oil and gas production, causes the flattening at the upper ends of the curves.

These curves show the gas consumption for maximum production rates. As the circulated-gas rate is lowered, oil production will decrease—the amount of decrease depending upon the productivity index of the well. If the productivity index is low, the circulated gas can be reduced materially without noticeably affecting the production rate; whereas if the productivity index is high, a small decrease in gas may cause a severe drop in production rate.

In order to show the relation between the gas-consumption curves and actual gas-lift practice, a curve interpolated from Figure 15 for a depth of 5,000 feet and a tubing pressure of 50 pounds per square inch has been added to Figure 16. The points falling below the curve represent conservative gas-lift practice for wells with productivity indices between 0.5 and 1.5; whereas the points falling above the curve at low rates of production represent, in large measure, the natural tendency on the part of the operator to circulate too much gas. If too little gas is circulated, the well heads or dies, and immediately brings the condition to the attention of the operator; but the circulation of too much gas usually is indicated only by a decrease in oil production from the well. Most

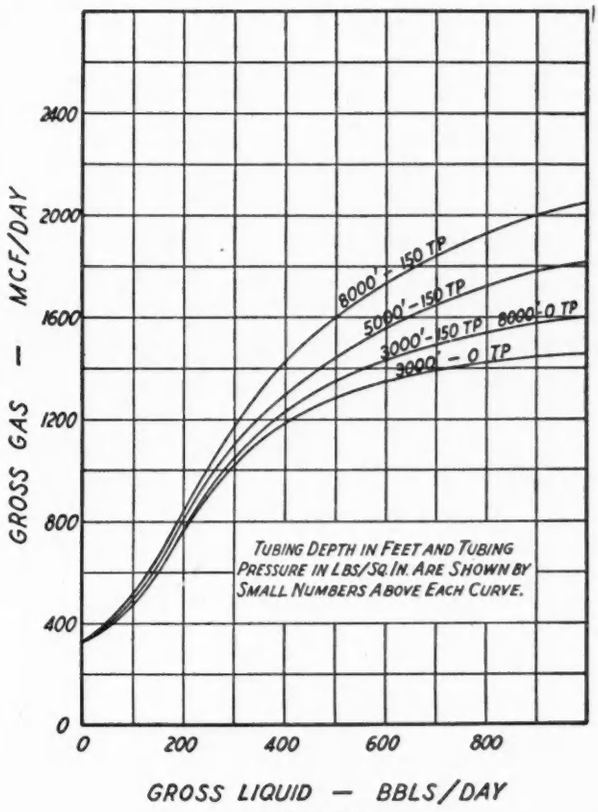

FIGURE 15

Gas Consumption of 2½-Inch Gas Lift for Minimum Pressure at Bottom of Tubing (Dominguez and Long Beach Data).

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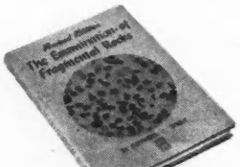

"THE EXAMINATION OF FRAGMENTAL ROCKS"

by

FREDERICK G. TICKELL

Professor of Petroleum Engineering at Stanford University

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TABLE 2

Critical Conditions in Santa Fe Springs Wells

After E. L. Davis[10]

Tubing Depth (Feet)	Gross Fluid (Barrels Per Day)	Gross Gas (M.C.F. Per Day)
7,560	30	400
7,000	135	200
6,000	137	380
6,280	62	350
Average	...	333

of the smaller wells shown in Figure 16 have such low productivity indices that the difference in production would not be noticed.

The limits of error of the curves covering straight gas lift through 2½-inch tubing are variable. In the range of production rates of 100 barrels to 400 barrels per day, and depths of 4,000 feet to 6,000 feet, the limits are probably less than plus or minus 10 percent. At high rates of production and low tubing pressures, the errors may be appreciable; and at depths greater than 6,000 feet the method of extrapolation may introduce additional discrepancies.

Some data from the Kettleman Hills and Inglewood fields of California indicate that the pressures at the bottom of the tubing are approximately 15 percent lower than the corresponding points on the curves. The wells in question at Kettleman Hills are 8,000 feet deep, and the gravity of the oil is approximately 35 degrees API; but those at Inglewood are only 3,000 feet deep, and the gravity of the oil is 29 degrees API. The specific gravity of the gas produced from the wells at Kettleman Hills and Inglewood, however, is higher than that of Dominguez gas. These higher gas gravities may indicate that the corresponding oil-gas mixtures contain a large proportion of high vapor-pressure material, which would tend to reduce the interfacial tension between gas and oil. It is possible that such variations can be adjusted by means of correction factors or additive constants for fields in which the performance seems to deviate consistently from the curves given.

Part 2 of this article will appear in an early issue of The Oil Weekly.

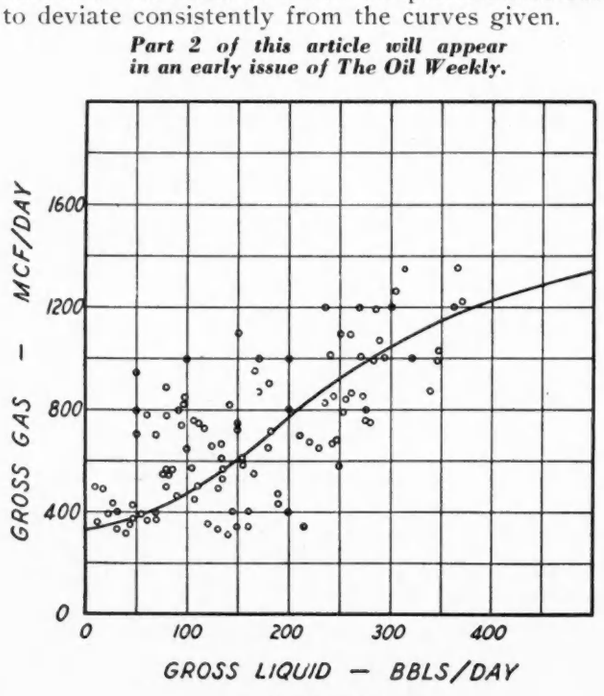


FIGURE 16

Dominguez Gas-Lift Practice

(Curve interpolated from Figure 15.) 2½-inch tubing; 20 to 90 pounds per square inch tubing pressure; 4,000 feet to 7,000 feet depth.

Oklahoma Deep Test Quits Short of Record

By BRAD MILLS, Associate Editor

DRILLING of Continental Oil Company's Proctor 1 to a depth of 14,582 feet was possible because of close cooperation between the company and the drilling contractor, intelligent supervision, loyalty of the drilling crews, and use of suitable equipment. In attaining this depth, this Washita County, Oklahoma, wildcat became the second deepest test ever drilled, and the deepest in the Mid-Continent. It recorded the deepest penetration made with Diesel-electric equipment.

The advancement of geological, mechanical and chemical sciences more than offsets the depth factor, although no apology is due for stopping the well as the second deepest hole ever drilled.

The company regarded drilling Proctor 1 as a routine wildcat operation, and did not start the well in search of a new depth record. Failure to develop production above 10,000 feet prompted continuation of drilling in formations regarded as favorable for the accumulation of oil. Sediments proved much thicker than expected, and the well served as an excellent exploratory test of Pennsylvanian formations in the Anadarko basin.

Men at the well took their jobs seriously and each workman assumed a share of responsibility for progress. Only three crews were used and each crew worked the same shift from month to month.

Drilling to 14,582 feet with medium-weight equipment points to future depth records far below those currently regarded as "deep."

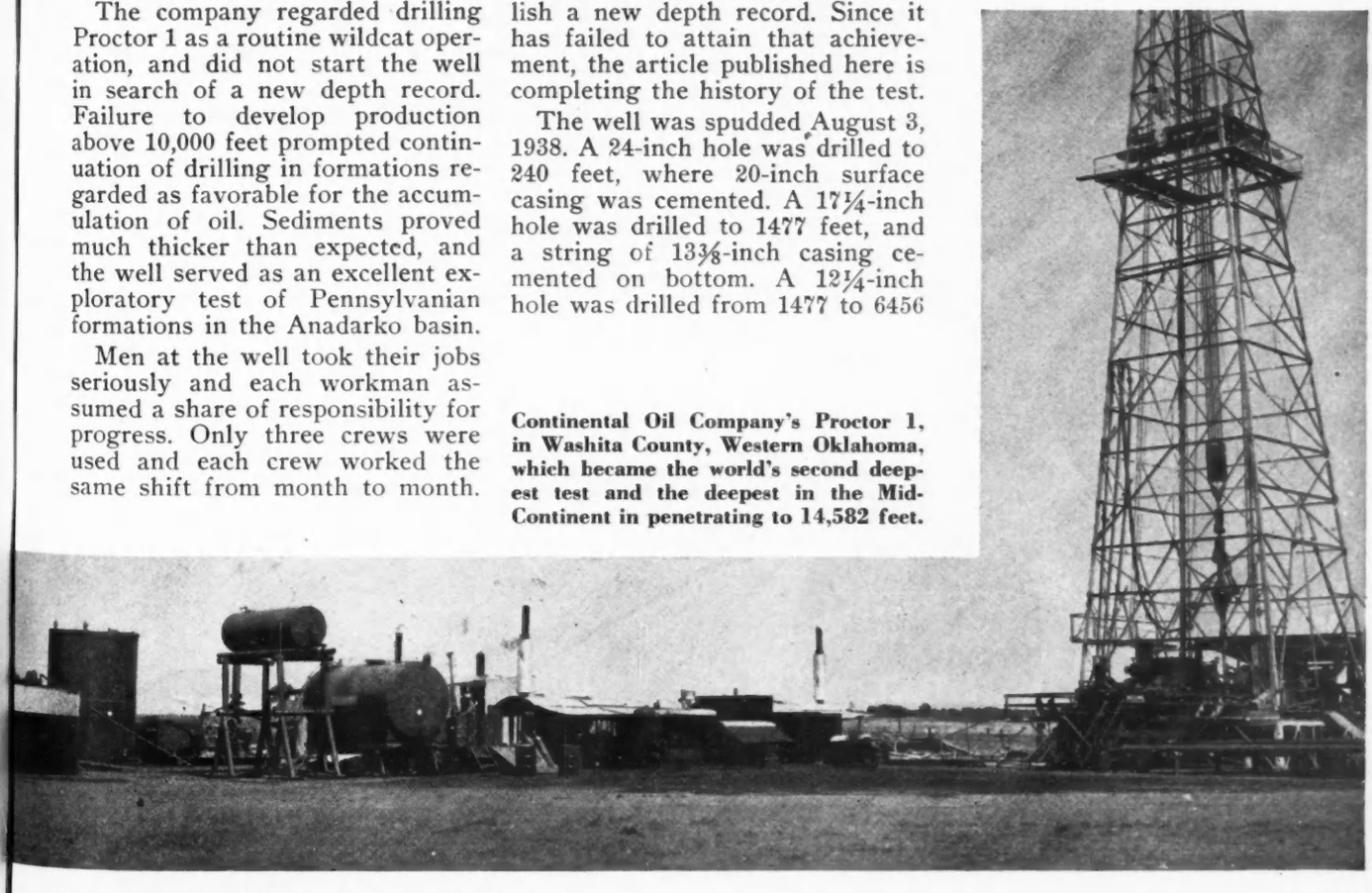
Outstanding mechanical developments in drilling Proctor 1 were: cementing 9⅝-inch casing at 10,173 feet; cutting out 2250 feet of drill pipe between 12,229 and 14,464 feet; squeeze cementing of porous formations below the 9⅝-inch casing, and successful use of Diesel-electric equipment.

Continental's Proctor 1 for several months was looked upon as a prospective new world depth record, and was given pictorial treatment in THE OIL WEEKLY of October 2, 1939. At that time it was promised a full section would be devoted to the well should it establish a new depth record. Since it has failed to attain that achievement, the article published here is completing the history of the test.

The well was spudded August 3, 1938. A 24-inch hole was drilled to 240 feet, where 20-inch surface casing was cemented. A 17¼-inch hole was drilled to 1477 feet, and a string of 13⅜-inch casing cemented on bottom. A 12¼-inch hole was drilled from 1477 to 6456 feet, but size of the hole was reduced and a 9-inch hole drilled from 6456 to 10,196 feet. The 9-inch hole was subsequently reamed to a full 12¼-inch hole between 6456 and 10,196 feet. A record string of 9⅝-inch casing was cemented at 10,173 feet with 1500 sacks of slow-setting cement.

Deep Fishing Job

No major fishing jobs were recorded until a depth of 14,479 feet was reached. The drill pipe stuck at 13,000 feet, but circulating with oil broke it loose. While making a connection, shale heaved in on the reamer at 14,479 feet and froze the drill pipe. Circulation was finally



Continental Oil Company's Proctor 1, in Washita County, Western Oklahoma, which became the world's second deepest test and the deepest in the Mid-Continent in penetrating to 14,582 feet.

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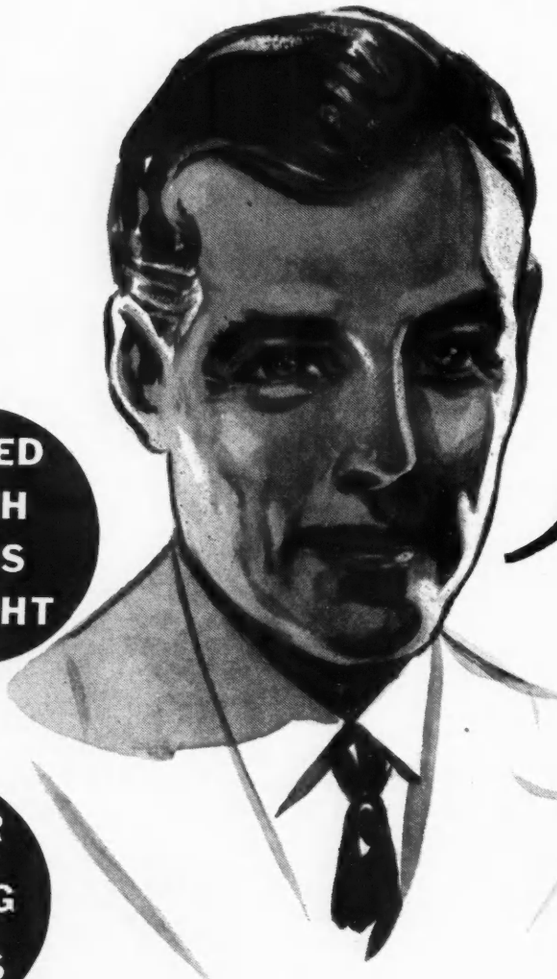

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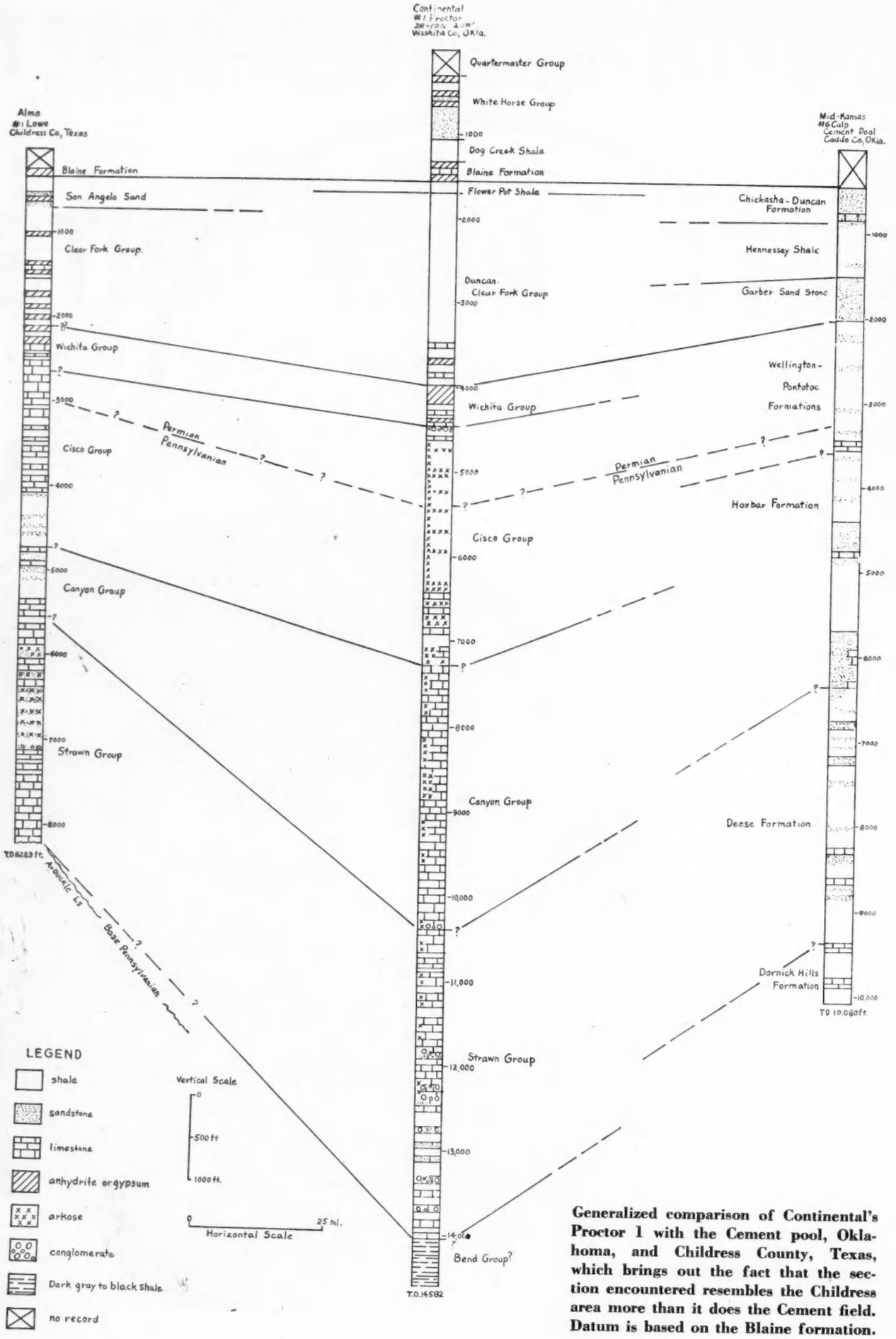

Generalized comparison of Continental's Proctor 1 with the Cement pool, Oklahoma, and Childress County, Texas, which brings out the fact that the section encountered resembles the Childress area more than it does the Cement field. Datum is based on the Blaine formation.

lost and it was necessary to back off the drill pipe at 12,229 feet.

The backing-off left 2250 feet of drill pipe in the hole. Six cuts were made and all but 28 feet of the drill pipe was recovered. This left only the short bottom section of the drill pipe, the drill collar and the reamer in the hole. These were cemented in the hole as a preliminary operation to sidetracking the junk.

The cutting job, which was an outstanding performance, included the following cuts: 452 feet; 335 feet; 391 feet; 422 feet; 419 feet, and 122 feet. The six successive cuts so nearly removed all the drill pipe that even the tool joint was cut off the last joint left in the hole.

The junk was cemented in the hole, with top of the cement at 14,229 feet, or 250 feet off bottom. After a long series of attempts to sidetrack and make new hole, a new depth of 14,495 feet was reached. A 7-inch O.D. liner was run to 14,491 feet, and hung in the 9⅝-inch casing at 9712 feet. The liner was run on 4¼-inch drill pipe with safety joint and cemented with 282 sacks of slow-setting cement.

After drilling out the cement inside the liner, the hole would not stand up below the liner. Top of the liner also was not cemented off, since returns were lost during attempts to raise weight of the mud.

The liner was re-cemented by stages with batches of 40 to 100 sacks. The cement retainer was set in the 9⅝-inch casing at 9688 feet, just above the top of the liner, and cementing was done by the squeeze process. Eleven batches were used for the full cementing job.

After successfully cementing off the top of the liner, the company decided to drill ahead and not to attempt re-cementing bottom of the liner. The mud weight was raised to 12.5 pounds per gallon, washed to bottom, and drilled ahead to 14,581 feet. While pulling up to make connection the drill pipe stuck and circulation was lost 25 feet off bottom. The pipe was lost and as high as 5000 pounds pressure was applied without success. A safety joint had been placed on the third stand, at which point the drill pipe was backed off. The free drill pipe was pulled while waiting for the 5 3/16-inch wash pipe, leaving 3200 feet of drill pipe in the hole. The drill pipe was run back into the hole, screwed back in, backed off again, and pulled. The plan was to wash over the bit and then try to get loose.

Other mechanical difficulties developed and all the drill pipe was not recovered. A decision was made to plug at bottom of the liner and test formations that showed promise below 10,000 feet. A gas stratum at 10,900 feet was especially noticeable. The liner was perforated above 13,360 feet, but the test was unsuccessful. Drill pipe was pulled and the liner was re-cemented prior to testing at shallower levels.

A total of 216 bits were used in drilling the original hole to 14,479 feet, of which 33 were 12¼-inch rock bits; 46 were 12¼-inch reaming bits (hard formation); 56 were 9-inch rock bits; 79 were 8¼-inch rock bits; 1 was 17¼-inch reaming bit; and 1 was a 24-inch reaming bit. Several bits of various types were used in redrilling and sidetracking work.

A string of 6⅝-inch drill pipe was used to a depth of 6456 feet, and 4½-inch O.D. drill pipe from 6456 to 10,196 feet. Below 10,196 feet a combination string of 3½- and 4½-inch drill pipe was used, a drilling point near bottom having shown 4600 feet of 3½-inch drill pipe on bottom and about 9900 feet of 4½-inch on the top of the string.

During drilling operations below 13,000 feet, the drill pipe stuck several times, but it was possible to circulate loose in a short time. Not a twistoff nor a leaky tool joint was recorded during the entire drilling period.

During the last 500 feet of the original hole, about 60 feet per day was drilled. The bit was kept on bottom about 50 hours at a stretch.

A geologist was kept on the job constantly. Occasional cores were taken below 10,000 feet, and samples were caught every 5 and 10 feet.

Reaming took a considerable part of the elapsed drilling time. The 12¼-inch hole was drilled to 6456 feet on September 24, 1938, and the 9-inch hole completed at 10,196 feet on December 8. Reaming started December 10 in the 9-inch hole, and the smaller hole was enlarged to a full 12¼ inches on February 23, 1939.

Mud Conditioning

Particular attention was paid to mud conditioning. The mud was tested for viscosity and density every half hour. The engineer in charge tested frequently for Stormer viscosity, initial and 10-minute gel strength, Ph value and filtration test. Mud weight was carried at 10.7 and 10.8 pounds per gallon below the 9⅝-inch casing at 10,176. Circulation was lost with heavier mud. Mud of very low initial gel

[*Continued on page 55*]

Geological Section Encountered in Continental Oil Company's Proctor 1

Series	Group or Formation	Depth, Feet From	Depth, Feet To	Thickness Feet	General Description
Permian	Quartermaster Group	0	305	305	No samples, 0-285 feet. Red shale, 285-305 feet.
	Whitehorse Group	305	1050	745	Top 250 feet: Cloud Chief gypsums, red shales, and some red sandstones. Bottom 495 feet: Fine red sand with gypsum in upper part.
	Dog Creek Shale	1050	1308	258	Red Shale.
	Blaine Formation	1308	1556	248	Interbedded gypsum and red shale, some dolomitic limestone in middle part.
	Flower Pot Shale	1556	1650	94	Red and grayish green shales.
	Duncan-Clear Fork Group	1650	3977	2327	Red shale with thin beds of grayish green shale; thin beds of gypsum and dolomitic limestone in bottom 500 feet.
	Wichita Group	3977	4460	483	Top 228 feet: Anhydrite. Middle 155 Feet: Interbedded anhydrite, greenish gray shales, and dolomitic limestones. Bottom 100 feet: Dolomitic limestone, some interbedded anhydrite.
Pennsylvanian	Cisco Group	4460	7290 ±	2830	Top 1970 feet: Maroon shale with varying amounts of arkose. Bottom 860 feet: Interbedded limestone, arkose, and maroon shale.
	Canyon Group	7290 ±	10,380 ±	3090	Limestone with considerable arkose present, come thin shale beds.
	Strawn Group	10,380 ±	14,025 ±	3645	Top 2150 feet: Predominantly limestone, with some arkose and limestone conglomerates, some dark gray calcareous shales, several shows of gas in more sandy phases. Bottom 1495 feet: Interbedded dark gray shale and limestone, some conglomerates, traces of arkose, few shows of gas.
	Bend Group?	14,025 ±	14,582 T.D.	....	Dark gray to black shale with thin beds of dolomitic limestone.

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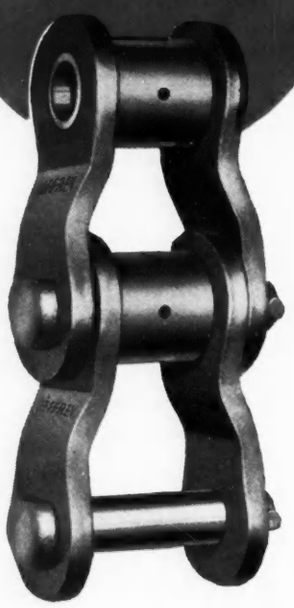

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HIGHLIGHTS IN THE WEEK'S NEWS

Control

Measure being drafted for Illinois oil conservation

Following a month during which an "agreed" bill for oil conservation in Illinois was subjected to severe criticism by a group of producers, refiners and royalty owners, Governor Henry Horner revealed last week that he was having a measure drafted in an effort to reach a "harmonizing point" among factions of the industry which have not been able to reach complete agreement on the need for and the type of production control.

A previous bill submitted by Illinois-Indiana Petroleum Association, Petroleum Association of Illinois, and Independent Oil Producers Association was attacked, however, by a fourth organization representing independent interests operating in the basin—the Illinois Oil Producers' Equity Association.

The governor, speaking during his press conference last week, said he was convinced the state's oil production should be controlled to prevent waste, but added that he had not definitely decided to include the subject in the coming special session call.

"A bill is being drafted by the legislative reference bureau which I think will be agreeable to all honest fellows," the governor said. "What we are going to do is to send copies of it to all oil interests and let them point out their complaints with the idea of reaching a harmonizing point.

"I want a measure that will not regulate oil production so much as it will conserve," Horner added. "Producers are being told that such a measure can't be passed and in preparing a bill I had in mind one that will not be smashed."

The governor indicated that if the bill is presented to the special session, he will make a vigorous campaign for its passage.

Cole committee starts series of hearings on December 8-9

Washington, D. C.—Members of the oil subcommittee of the House Interstate and Foreign Commerce Committee have completed their plans for personal investigation of conditions in leading oil fields.

The itinerary worked out by Representative William P. Cole, Jr., of Maryland, chairman of the group, calls for a stop first at Mattoon, Illinois, where on December 8 and 9 conditions in the Illinois oil fields will be surveyed. The group will spend December 10 in the East Texas field, the following day at Shreveport, Louisiana, and will be in New Orleans December 12.

On December 13 a three-day hearing will be opened in New Orleans for the purpose of receiving the views of state regulatory officials on the Administration's production control bill. Colonel Ernest O. Thompson of the Texas Railroad Commission already is scheduled to testify, together with other members of the Interstate Compact Commission and probably the governors of California, Nebraska and Illinois.

A final series of hearings, at which the views of representatives of the industry will be sought, will be held in Washington some time in January, it was said.

Cole hearings may be held in Washington

Texas Railroad Commission Chairman Lon A. Smith has written Wm. P. Cole, Jr., of the Interstate and Foreign Commerce Committee in Washington, suggesting that hearings be held in Washington in January to present the oil states' side of the proposed federal oil control program.

Smith said that Cole had written him suggesting a meeting in New Orleans in December while members of the committee would be touring Louisiana and Illinois oil fields, observing conditions. However, the commissioner felt that the oil states should present all their testimony at one hearing and that this conference should be in Washington.

A similar letter was sent to other oil producing states by Smith, suggesting that they endorse the program proposed and advise Congressman Cole of their desires.

Ernest O. Thompson, chairman of the Interstate Oil Compact Commission, also has requested permission for oil states to present their side of the picture before congressional committees in Washington in January.

Wm. P. Cole, Jr. wrote Thompson asking that he appear before the committee at hearings set for December 13, 14 and 15, in New Orleans. Cole said he planned to hear oil state governors at that time and invited Thompson to appear as chairman of the compact.

"I have consulted compact member states," Thompson wired Cole, "and we prefer to be given an opportunity to present the states side of this oil control question in Washington after Congress convenes so that our members in Congress from oil states may hear the presentation, and so that our case may be presented as a unit connectedly."

Thompson pointed out that a compact commission meeting had already been set for Wichita, Kansas, on December 14, and the Texas statewide proration hearings was to be held in Austin on December 15.

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Allowables

Bureau still sees no big war orders in December forecast

Refusing to concede as valid representations of the Texas Railroad Commission that heavy export demand justified a sharp increase in the allowable for that state, the Bureau of Mines has placed the daily average demand for domestic crude oil during December at 3,619,700 barrels, 300 barrels under the average forecast for November but 320,100 above actual production in December, 1938.

"Practically all of the indicated increase in demand for the last quarter of this year appears to reflect improvements in the domestic market as forecasts of total export demand do not indicate any general increases over the relatively high figures for the same period last year," the bureau explained.

Daily average crude-oil production during the four weeks from October 7 to November 4 was 3,625,000 barrels and runs to stills 3,559,000 barrels, the bureau stated in a review of the current situation. During that period total crude oil stocks declined 735,000 barrels, 53,000 barrels of which was foreign stocks, leaving a net decline in domestic crude stocks of 682,000 barrels, or 24,000 barrels daily, and, addition of this stock decline to the production indicated that the apparent demand for domestic crude during the period was 3,649,000 barrels daily. This, it was pointed out, was about 59,000 barrels in excess of the bureau's estimate for October, re-

flecting chiefly larger runs to stills and a substantial increase in gasoline stocks rather than a decrease as forecast.

Industrial Activity

"The demand for distillate fuel oils and residual fuels is continuing at a high level, due to increasing industrial activity," the report commented. "Seasonal fuel oil stocks east of California are relatively low. Apparently, the domestic demand for motor fuel is approximately as forecast, while exports of both motor fuel and crude have been retarded by the disturbance in shipping conditions due to the European war.

"The recent level of refinery operations has been relatively high, in anticipation of greater total demand than has materialized. As a result, gasoline stocks will be at a considerably higher level than last year at the close of the fourth quarter, and may approximate closely the high level of December 31, 1937."

Estimated domestic demand for motor fuel for the final month of 1939 is placed by the bureau at 43,600,000 barrels, or about 5 percent more than the actual demand in December of last year. Motor-fuel exports have been estimated at 4,600,000 barrels, or 800,000 barrels less than the actual exports a year ago.

Gasoline Stocks Increase

Stocks of finished and unfinished gasoline on September 30 amounted to 70,992,000 barrels and statistics of the American Petroleum Institute indicate an increase of approximately 1,860,000 barrels during October, bringing them to about 72,850,000 barrels at the close of that month. The bureau estimates an increase of 3,900,000 barrels in finished stocks during December.

Benzol and direct sales of natural gasoline are estimated at 1,000,000 barrels, making refinery production 51,100,000 barrels, which is distributed among the various districts as follows:

East Coast, 6,460,000 barrels; Appalachian, 1,780,000 barrels; Indiana-Illinois, 9,570,000 barrels; Oklahoma, 3,190,000 barrels; Kansas-Missouri, 2,640,000 barrels; Inland Texas, 3,810,000 barrels; Texas Gulf Coast, 13,730,000 barrels; Louisiana Gulf Coast, 1,580,000 barrels; Inland Louisiana, Arkansas, 870,000 barrels; Rocky Mountain, 1,220,000 barrels; California, 6,250,000 barrels.

Natural gasoline to be blended at refineries is estimated at 8.2 percent of the total gasoline production, or 4,190,000 barrels, and the yield of straight-run and cracked gasoline is placed at 44.25 percent. The application of this yield to the production of 46,910,000 barrels of gasoline gives crude runs of 106,010,000 barrels, or 3,419,700 barrels daily. Foreign crude runs are estimated at 2,700,000 barrels; exports of crude oil are estimated at 6,000,000 barrels, and fuel and losses at 2,900,000 barrels.

Accordingly, the bureau said, the total demand for domestic crude oil in December as indicated by the estimates, is 112,210,000 barrels, or 3,619,700 barrels daily, with requirements by states of origin as shown in the accompanying table.

ESTIMATED DAILY AVERAGE CRUDE-OIL DEMAND BY STATES (Barrels)

(As no changes in crude-oil stocks are involved in these estimates, they represent demand rather than production.)

State	*Forecast December, 1939*
Texas	1,438,100
California	594,500
Oklahoma	437,600
Illinois	315,200
Louisiana	255,200
Kansas	168,000
New Mexico	110,000
Michigan	61,000
Wyoming	60,000
Arkansas	56,100
Pennsylvania	50,000
Kentucky	16,100
Montana	15,200
New York	15,200
West Virginia	10,000
Ohio	8,100
Indiana	5,200
Colorado	4,200
	3,619,700

Texas December allowable set at 1,386,439 barrels

The Texas Railroad Commission has entered its December state-wide proration order providing for a daily average net allowable of 1,386,439 barrels, which is lower than the November net allowable, and the cut was accomplished by closing all fields 12 days during the month.

The basic allowable is 2,141,441 barrels, which is 45,237 barrels above the basic allowable of 2,096,204 barrels which went into effect on November 1. The new net figure is 51,661 barrels less than the Bureau of Mines' estimate of consumer demand for November, which is 1,438,100 barrels daily. Fields will be closed on each Saturday and Sunday and on December 1 and 25.

In a prepared statement, Commissioner Lon A. Smith said:

"There are three reasons why this order has been set for a duration of 30 days. First, the commission desires to remain within the Bureau of Mines' estimate and the bureau issuing its figures on a 30-day basis. Second, in view of international conditions, there is a chance that demands beginning January 1, 1940, may increase, and the commission desires to have Texas' production well in hand in the event this occurs. Third, the commission desires to watch bottom hole pressure fluctuations in East Texas field.

"Also, December 15 has been set as the date for the next state-wide oil and gas hearing. On the same date, the commission will hear requests from operators on the west side of East Texas pool for an increase in production allowable. This procedure will result in economy of time for the operators and for others interested in this application."

Exemptions

The following fields are exempt from the Saturday and Sunday shutdown: Chicon Lake, Eckert, Minerva-Rockdale, Somerset, Southton, Mission River, Barbers Hill, Beaumont West, Boling, Damon Mound, Dickinson, Esperson Dome, Eureka Heights, Goose Creek, Gillock, High Island, Hamman Deep, Hitchcock, Old Hull, New Hull, League City, Lochridge, Mykawa New, Old Ocean, West Columbia, West Columbia New, Charmousca, Midway, Sinton, Taft, Corsicana Shallow, Currie, Mexia, Powell, Richland, Sulphur Bluff, Wortham, Wortham Shallow, Boggy Creek, Lone Star, Rodessa, Big Lake, McMillan, World, Eaves, Garza, Hendrick, Howard Glasscock, Iatan-East Howard, Leck, Shearer, Snyder, Taylor Link, Tobarg, Burns.

California top per well allowable is 204 barrels

Reduction of the top allowable for 667 maximum producing wells in California to 204 barrels daily each, the setting of the state's December quota at 599,000 barrels daily and the unanimous adoption of a report on depth pressure made by a special committee of 9 engineers, featured the regular monthly meeting last Tuesday afternoon of the Central Committee of California Oil Producers in Los Angeles.

The cut in the top allowable was the fifth since adoption of the original top of 250 barrels daily each of nearly 6 months ago. Mainly because of the number of new flush producers, the top allowable for this type of well has been cut 10 barrels daily per well monthly, until for November it reached a low of 210 barrels daily each. During November 36 such wells were completed, while for the state 107 new wells of all types were brought in during the past month for a potential of 106,200 barrels daily.

According to Umpire J. R. Pemberton the adoption of the depth pressure method of setting allowables for the state's wells, will eliminate the necessity of making potential tests. In the past this method of getting an idea of how much oil a well was capable of yielding potentially resulted in considerable excess production and upset the curtailment picture. Pemberton told members that the new plan will make the curtailment plan more effective and a lot easier to handle from a statistical standpoint.

East Texas to be principal problem at Texas hearing

The Texas Railroad Commission has scheduled a joint hearing for December 15 at Austin. The usual statewide proration hearing will be held, and the commission also will take up the East Texas problem again.

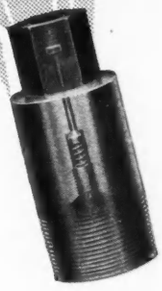
The East Texas hearing was originally designated as a hearing on the application of Sinclair Prairie Oil Company and others for an adjustment of the allowables on the west side of the field; however, the notice issued by the commission states that it will discuss the problem of salt water disposal.

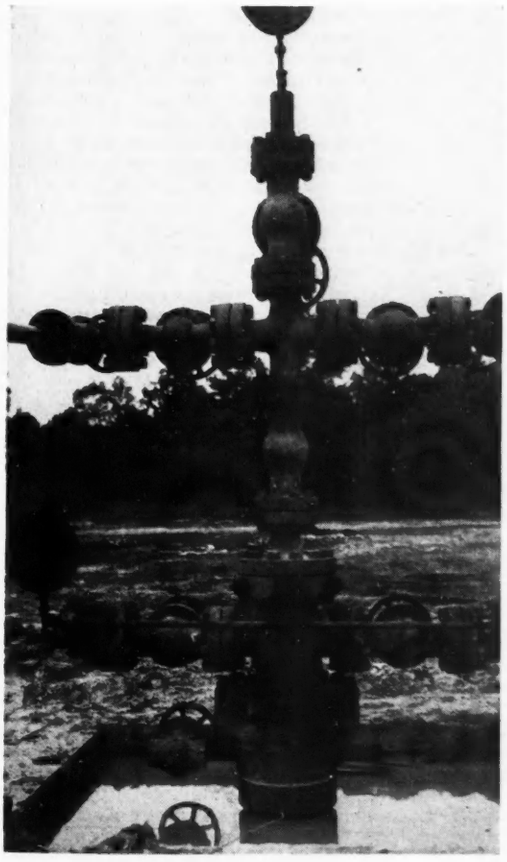
Several plans have been offered in the past two or three years to dispose of the salt water in East Texas, and several methods have been devised for returning the water to the reservoir. Last week, Commissioner Ernest O. Thompson suggested that the commission place a premium on this process by allowing operators to produce one barrel of oil for each 100 barrels of salt water that they returned to the reservoir. Since the field produces about 150,000 barrels of salt water daily now, Thompson thought all the water could

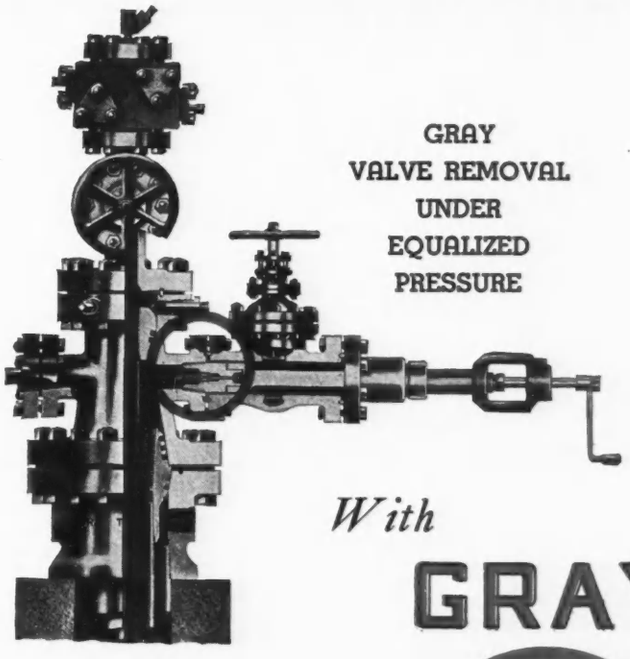
THE PLUG

THAT PICKS OFF LOAFING *Valves*

AND PUTS THEM BACK TO
WORK ON OTHER JOBS...







GRAY
VALVE REMOVAL
UNDER
EQUALIZED
PRESSURE

With

GRAY

SYSTEMS OF WELL CONTROL

YOU GET

ECONOMY: Instead of valves and other equipment being left on wells to rust away, they are removed to perform their functions again on other wells.

GRAY

TOOL COMPANY

HOUSTON – TEXAS

be returned to the reservoir and only 1500 barrels more oil produced. This, he thought, was a small premium to pay for the result to be obtained.

Of equal importance will be the testimony at this hearing of Dr. F. V. L. Patten, chief petroleum engineer for the commission. At the state-wide hearing in Austin last week, Patten startled engineers and operators by indicating that the necessity for maintaining flowing pressures in the East Texas field was, in his opinion, a myth. Patten made it plain that, to his mind, pressures might drop to that point where gas comes out of solution without doing the field the least damage from the standpoint of conservation. He said that maintenance of flowing pressure was beneficial from the standpoint of economics, that is, it was beneficial because it costs less money to flow oil than to pump it.

However, from the standpoint of obtaining a higher ultimate recovery from the reservoir, it offered no benefits that could not be obtained by maintaining the pressure sufficiently high to prevent the gas from coming out of solution, he said.

For nearly nine years, the Texas Railroad Commission has operated the East Texas field on the theory that the greatest ultimate recovery would be obtained by maintaining the flowing life as long as possible. It is for this reason that the fields have been shut down on numerous occasions. It is on this basis that the commission now requires shutdowns two or three days each week.

It is entirely possible that Patten's testimony at the hearing on December 15 may have the effect of requiring a radical change in the policy of conducting operations in the East Texas field in the future.

Venezuela

Venezuela agreement furor mounting

Furor over the oil concessions in the Venezuelan trade agreement continued to mount last week, with Representative Wesley E. Disney (Dem. Okla.) flatly charging Secretary of State Hull with ignoring the intent of Congress that the various excise taxes on import commodities were not to be touched by the reciprocal pacts.

At the same time, Russell B. Brown, counsel for the Independent Petroleum Association, revealed that no consideration had been given a letter to President Roosevelt, asking him to delay proclamation of the treaty pending argument on the legality of the excise tax cut.

Citing a statement by W. S. Farish, president of Standard Oil Company of New Jersey, that that company had advised the state department of its position on the proposed reduction at the request of the department and had taken the stand that it was not desirable, Brown asked the department whether any other importers had been consulted and alleged it had short circuited the committee for reciprocity information, through which those interested in trade agreements are supposed to present their arguments, "by inviting an importer or some importers to secret conferences concerning commodities whose inclusion in the negotiations might be of special interest to these importers."

"Firm in our own conviction that the state department has at least violated the spirit of the reciprocal trade agreements law we feel that all the facts leading to this agreement should be known," he said. "We are advised by the secretary of the committee for reciprocity information that this information cannot and will not be given us by the committee. He states that this position is not peculiar to the Venezuelan agreement but is in conformity with a policy fixed by the state department. Our remedy seems to be by court procedure and repeal of the agreements law."

Suggesting that the department's action "was not within the powers granted or intended to be granted by the Congress, or implied by the reciprocal trade agreements act as passed by the Congress," Disney recited the history of the reciprocal tariff act to show that the matter of protecting the excise taxes was considered at length in both House and Senate, and that the committee of both in charge of te bill recommended that the President be given no right to reduce or increase any excise duty.

So concerned was the Senate with this matter, he pointed out, that Senator Pat Harrison, (Dem. Miss.), chairman of the finance committee, submitted an amendment specifically limiting the President's authority to customs duties, and withdrew it only when assured that the measure, as written, provided ample protection.

"If the action is not a 'breach of faith' with the Congress, the most favorable light that could be placed on it would be to call it a misinterpretation of the language and intent of the Congress," Disney declared in a letter to Secretary Hull. "More expressly is this true since the excise taxes have expired (although renewed) after the passage of the act.

"It is respectfully suggested that had this action been contemplated or foreseen, specified language would have been inserted in the act, or it likely would not have passed. Nowhere does the record evince any intention on the part of the Congress to turn this tax item over to the executive department.

"My understanding is that the vast volume of imports from Venezuela is petroleum and petroleum products. The present Temporary National Economic Committee has been making a survey of present conditions with a view of determining whether or not we are moving toward monopoly, and if so, in what branches of the business. The oil industry was thoroughly investigated by the economics committee, with a view to the elimination, as far as possible, of practices existing or leading to monopoly. So we have this anomalous situation, that one arm of the government is attempting to forestall and eliminate monopoly, and another department, by the reduction of these excise taxes, gives the largest oil organization in the world a more powerful grip on the domestic situation by permitting it to more easily affect its domestic competitors by the terms of this agreement."

Standard of New Jersey against lower tariff

Standard Oil Company of New Jersey does not approve the scheduled reduction of the excise tax on crude oil and fuel oil imported from Venezuela, according to W. S. Farish, president of the company.

In New York last week the head of the large concern contradicted the idea that his company sponsored or supported the scheduled tariff reduction.

"In view of direct statements made by several speakers before meetings of the American Petroleum Institute in Chicago and inferences drawn from other remarks," explained Farish, "I feel that I should make clear the position of the company in respect to Venezuelan imports.

"Because the company I represent is producing not only in Venezuela but in other foreign countries and the United States, we have always maintained an attitude of strict neutrality in discussions of tariffs on oil. When the proposal to conclude a reciprocal trade agreement with Venezuela, providing for a reduction of 50 percent in duty on a part of the imports from that country, was under consideration, we were asked by the state department to express an opinion on the merits of the question.

"We replied that we believed that the agreement should bind the duty at the rate now in force, namely, 21 cents per barrel, feeling that the proposed reduction would be to the disadvantage of American producers.

"At the same time," continued Farish, "I feel I should reiterate that it is our sincere conviction that there should be no duties paid on imports in bond." In this connection, he pointed out that oil imported in bond provides work for refineries and employees in the United States and also furnishes business for American-owned ships.

"Inasmuch as the products are used for foreign bunkers or are exported," he continued, "they do not enter into competition with domestic oil, which cannot be sold at a price to move into such consumption.

"The practice of maintaining free ports, or of paying drawbacks on imports remaining in the importers' hands only during fabrication for later reshipment out of the country, is long established and of recognized public value," Farish concluded.

Michigan protests Venezuelan pact

P. J. Hoffmaster, Michigan director of conservation, and Dr. R. A. Smith, state geologist, will make a formal appeal against the Venezuela trade agreement as contrary to the principles and ends toward which great efforts are being made in Michigan for conservation of natural resources.

Hoffmaster said the Venezuela trade agreement would jeopardize Michigan's program of conservation and prevention of waste. "It would let 2½ times as much oil into the country as Michigan produces," he asserted.

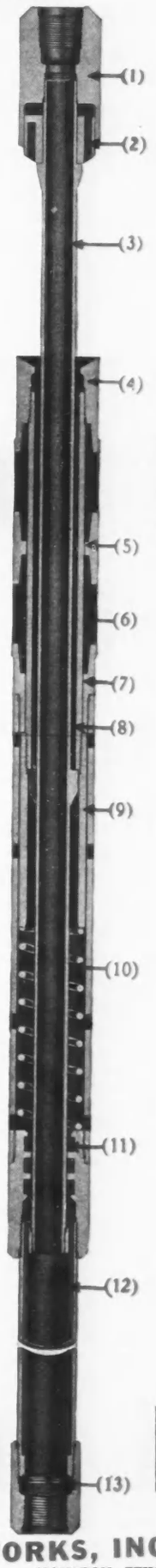
Dr. Smith also will protest the agreement in its relationship with copper. "Michigan's copper mines already are hard hit and this agreement would increase the burden and problem."

Another Perfect Setting of a

CAMERON

TYPE "G" CIRCULATING ANCHOR

PACKER



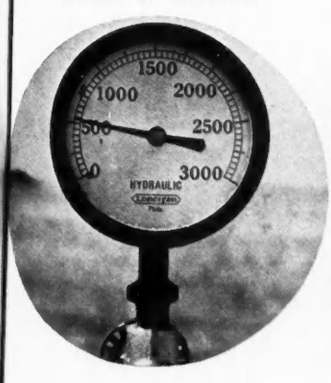
BOTTOM HOLE PRESSURE · 2600 LBS.
TUBING FLOW PRESSURE · 600 LBS.
CASING PRESSURE · NONE!

Surface gauges tell the unquestionable truth about the success or failure of a packer setting. Take, for example, the gauges on this Easterwood Oil Company well in the East White Point field, San Patricio County, Texas, where the bottom hole pressure has been officially gauged at 2600 lbs. A Cameron Type "G" Circulating Anchor Packer, set at approximately 5600' in this well, effected a perfect seal between casing and tubing, thus relieving the oil string of the high bottom hole pressure, as shown by the casing gauge below. A Cameron Bottom Hole Choke, made up in the tubing string just above the packer, was used to reduce the tubing flow pressure to approximately 600 lbs., as shown by the tubing gauge herewith.

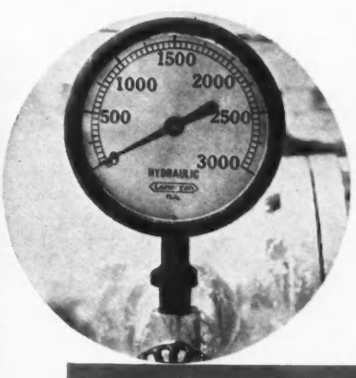
The Cameron Type "G" Circulating Anchor Packer is extremely simple in design and operation. There are no J-tools, slips, or other complicated setting mechanisms. The packer is set by simply letting off part of the weight of the tubing. The valve is provided with a positive self-feeding packing element to assure a pressure tight seal the instant the valve packer contacts the valve seat. The Packer is spaced at the desired point in the oil string by the use of spacer pipe of the required length, or may be set on top of the liner. The spacer pipe may include either screen or perforated pipe. After the packer is set, full pump pressure may be introduced through either the oil string or tubing to test the efficiency of the seal.

Full particulars on Cameron Type "G" Packers and Bottom Hole Chokes, together with the Cameron simplified bottom hole setting method, will gladly be provided on request.

TUBING GAUGE



CASING GAUGE



Principal Parts of the Type "G" Packer: (1) Valve cage; (2) Valve packer; (3) Flow pipe; (4) Valve seat; (5) Packer spacer; (6) Packers; (7) Packer retainer; (8) Mandrel; (9) Lower sleeve; (10) Spring; (11) Seal rings; (12) Drive nipple; (13) Reducing coupling.

Surface gauges and Cameron Safety Xmas Tree, Easterwood Oil Company, East White Point Field, San Patricio County, Texas. Note that the Xmas Tree is assembled on the new Cameron Type "LD" Tubing Control Head.

CAMERON IRON WORKS, INC.
711 MILBY ST. HOUSTON, TEXAS
Export: 74 Trinity Place, New York, N. Y.
California Distributor: The Howard Supply Co., Los Angeles
Oklahoma Representative: Paul Edkin, Tulsa

Courts

Supreme Court sustains Judge Stone in Madison decision

Rejection by Judge Patrick T. Stone of the Wisconsin Federal District Court of the jury verdict of guilty against defendants in the so-called Madison oil case was affirmed by the Supreme Court November 22 by an equally-divided bench.

Because of the fact that the court split four to four, no formal opinion was rendered. No indication was given by the court as to how the individual justices viewed the case, but the gossip in Washington is that the government's contention that jury verdicts should not be ignored would most likely be supported by the four latest appointees—Associate Justices Black, Reed, Frankfurter and Douglas—as opposed to Chief Justice Hughes and Associate Justices McReynolds, Stone and Roberts.

No intimation of its future course was given by the Department of Justice, but there were indications that a petition for a re-hearing would be filed after the full membership of the court has been reconstituted by the appointment by President Roosevelt of a successor to the late Associate Justice Pierce Butler, and a definite majority decision can be reached.

At the same time, it was stressed in government circles that the court's action does not finally dispose of the Madison case, even if no rehearing is had, since there are still pending, awaiting argument, appeals involving the anti-trust issues in the suit.

In affirming Judge Stone's decision, the Supreme Court inferentially concurred in his contention that a judge may reserve a ruling on a motion for a directed verdict until after a verdict has been returned by the jury.

In the Madison case, at the close of the evidence, defendants filed motions for directed verdicts on the ground that the evidence was insufficient to sustain a conviction, and Judge Stone reserved ruling on the motions. The case then was submitted to the jury, and the court entered an order unconditionally denying the motions, but when the jury returned verdicts of guilty the defendants filed motions for judgment *non obstante veredicto.*

Later Judge Stone set aside the verdicts and dismissed the indictments on the ground that there was "no substantial evidence in the record fairly tending to sustain the verdicts of the jury," which order was challenged by the government. Thereafter the judge filed an order purporting to amend his former order which had unconditionally denied the defendants' motions for directed verdicts, by denying the motions subject to a reservation until after verdict of the question of law as to the sufficiency of the evidence, and entered another order, also challenged by the government, vacating the order granting the defendants' motion for judgment *non obstante veredicto,* but purporting to grant their pre-verdict motions for directed verdicts.

The Seventh Circuit Court of Appeals, to which the government carried the case, denied a writ of mandamus, and a further appeal to the Supreme Court was based on the contention that the appellate court erred in holding that the common-law practice in civil cases of reserving rulings on questions of law arising during the trial until after a verdict was reached authorized such a procedure in criminal cases in the federal courts.

The actual issues involved in the government's suit against the industry will be considered by the court later in action on appeals filed by both the government and the industry. The government charges that the Seventh Circuit Court of Appeals erred in holding that Judge Stone's instructions to the jury were not appropriate, and the industry contends that the government had not proved its case and that arguments of government counsel to the jury constituted such an appeal to passion, prejudice and class distinction as to deprive the defendants of a fair and impartial trial.

Taxes on oil payments liability of owner

In a decision handed down last week, the Texas Supreme Court has held that taxes on oil payments are the liability of the owner rather than the operator of the lease on which the well or wells may be located.

The decision was in a suit brought by Tom O'Connor against Humble Oil & Refining Company and Quintana Petroleum Company. O'Connor as lessor was to be paid $2,000,000 out of 7/32 of the oil and gas produced, this payment to be made in addition to the ⅛ royalty which he retained.

The question which the court considered was whether the reservation to the lessor of 7/32 of any oil produced until the proceeds of sale by the lessor of said 7/32 shall aggregate $2,000,000 constitutes an interest in land taxable as such against the lessor as its owner.

"We have reached the conclusion that the 7/32 interest is an interest in land taxable as such against O'Connor as its owner. The lease does not purport to convey and it does not presently convey to the lessee ⅞ of the minerals. It grants the land to him with provision that certain interests in the minerals are expressly reserved to the grantee, 'full title to such reserved interests being retained by the grantor.' The particular interest under consideration is reserved by the same language as that used in the reservation of the ⅛ royalties . . . with the single limitation that it shall remain in effect only until the stated amount has been realized by the lessor from proceeds of sales made by him, whereupon the said reservation shall terminate."

"Plaintiffs in error argue that if the 7/32 interest is assessed against O'Connor it can never be valued for taxation at a sum in excess of the remainder of the two million yet to be realized out of the proceeds; that when most of the two million have been realized, all the remaining value will then have inured to the benefit of the two oil companies, and that however enormous the taxable value might then be they would not be liable for taxes on any part of the 7/32. The apprehension arises out and proceeds from the erroneous assumption that in order to reach the value of the 7/32 of the minerals for taxation all of such fractional interest, as if it were owned without limitation, must be assessed either as the property of the lessor or the lessee.

"It is provided in Article 7174 that real property or an interest in it shall be valued at what it is fairly worth in money or at such price as it would bring at a fair voluntary sale for cash. It is apparent that, where there is substantial production as here, the right to a part of the minerals as they are produced, subject to the limitation that the right ceases when a sum has been realized, is not of as great value as would be the right to an equal part of the minerals not subject to limitation; and it is further apparent that the value of the lessor's right or interest is so limited, assuming the continued production, will decrease each year. These facts must be considered in valuing such interest for taxation. It is further apparent that the leasehold estate will become more valuable as the time approaches when the 7/32 interest will vest in the lessee; and these facts must be considered in valuing the leasehold. When this method is used no part of the 7/32 escapes taxation . . ."

In effect the judgment held that the 7/32 interest is taxable as a unit and that the parties who have an interest in it are each liable for their portion of the tax. Thus, O'Connor at the outset was liable for his full interest, but as he is paid, the tax burden shifts to the operating companies in proportion to the payments made, and after O'Connor has been paid in full, then the operating companies are liable for the entire ad valorem tax.

The decision is of unusual importance because it would apply to any oil or gas lease in Texas where an oil payment is involved.

Texas wins title to Yates vacancy

The Texas Supreme Court has handed down a decision in favor of the state and its lessees in a suit brought against Stanolind Oil & Gas Company on a 28-acre strip in the Yates field, Pecos County. M. D. Bryant, Cardinal Oil Company, Dogie Oil Company and others were the successful litigants.

The tract is 122 varas wide, 1208 varas long, and lies between the west line of the Tyler Survey Number 1 and the east line of the T. C. Railway Company Survey Number 104 in Pecos County.

East Texas A.P.I. plans elaborate year-end meet

East Texas Chapter of American Petroleum Institute will meet at the Kilgore high school auditorium at 8 p.m. December 12. Report of the nominating committee and election of officers will be preceded by the showing of a sound motion picture and delivery of a paper, "Pumping Up the Hole," by M. L. Mayfield of the Cities Service Oil Company at Gladewater, and followed by a program of entertainment. A premeeting dinner party will be held at the Kilgore Hotel, reservations for which must be made in advance through the chapter secretary, W. S. Morris, P. O. Box 56, Kilgore.

MEN IN THE INDUSTRY'S NEWS

J. U. TEAGUE, formerly Gulf Coast division engineer for Humble Oil & Refining Company, has resigned to become petroleum engineer in charge of production for Hogg Oil Company. His headquarters will be at West Columbia, Texas.

MARION E. BROCK, assistant to the vice president of Gulf Oil Corporation in Houston, has been elected president of the Houston Kiwanis Club.

EVERETTE LEE De GOLYER, consulting petroleum geologist of Dallas, Texas, has been awarded the Anthony F. Lucas gold medal for 1940 by the American Institute of Mining and Metallurgical Engineers. The medal is awarded in recognition of distinguished achievements in improving the technique and practice of finding and producing petroleum. The award for 1940 was made upon recommendation of a committee of 16 leaders in the industry, headed by J. Edgar Pew. Previous recipients of the Lucas medal are Pew, vice president of Sun Oil Company, and Henry L. Doherty, president of Cities Service Company. The award was the second within a few weeks for De Golyer, who was just honored for distinguished service by the Texas Mid-Continent Oil & Gas Association. [The Oil Weekly of October 9, 1939, page 31]. There has been recent announcement by the University of Texas that De Golyer will joint the geology faculty of that school on February 1, 1940.

GEORGE G. CLIFTON and Max N. Clifton have formed an association to engage in the general practice of law and have opened offices in the Milam Building in San Antonio. George Clifton for a number of years has represented Crude Oil Pipe Line Company and affiliates. With the sale of Crude Oil Companies to Continental Oil Company recently, he has associated with his brother in the general practice of law. He, however, will continue to represent the Midland and Buckley interests, engaged in producing and developing oil properties. The recent sale of Crude Oil Companies includes terminal facilities at Corpus Christi and a pipe line through the southern part of Texas.

JOHN L. SULLIVAN has opened offices for Sultex Oil Company and Texon Royalty Company in Alamo National Building in San Antonio.

FRANK PHILLIPS will be feted at an elaborate party given by friends and employes of Phillips Petroleum Company in honor of his 66th birthday on November 28. To the party, in Bartlesville, Oklahoma, will come 10,000 employees from 33 states. A parade depicting the various periods in Phillip's life will end at the municipal stadium, where Oklahoma Governor Leon C. Phillips will speak. An aerial demonstration featuring Colonel Arthur Goebel, who won the Dole race under Phillip's sponsorship, will be held.

ALFRED W. LOTT has left the Shell Oil Company in St. Louis to join Pan-American Production Company as valuation engineer.

P. D. MOORE, of Moore Bros. Corporation, has been elected president of the Midland (Texas) Geological Society. H. D. Pennel, Amerada Petroleum Corporation, and Harvey Herd, Standard Oil Company of Texas, were chosen vice president and secretary-treasurer, respectively.

W. A. GUINN, co-owner of Paynee Royalty Company, which recently scored the first oil producer in Nebraska, is vacationing at his ranch near San Angelo, Texas. He operated in West Texas, with headquarters at Odessa, prior to the launching of the successful wildcat project in Nebraska.

CHRIS HARRISON, representative of Ferndale Drilling Company of Odessa, Texas, has established an office for the company in Falls City, Nebraska, as result of contract work lined up on acreage near the Falls City discovery oil well.

BONNEAU PETERS, chief scout for Standard Oil Company of Louisiana, was awarded a 30-year service pin last week at an informal gathering of employees, presentation being made by J. R. McWilliams, vice president of the company.

R. C. (BOB) EDWARDS, former vice president of the National Oil Scouts Association, has been assigned to scouting duties in Mississippi by Gulf Refining Company. Edwards formerly worked for this company in the Shreveport district.

RAYMOND SLOAN, assisted by Leo John and V. G. Beaver, Carter Oil Company, Tulsa office, directs a newly organized department for estimating crude oil reserves.

HOMER OGDEN, John W. Fribley and Ruby E. Jones last week organized Ogden James Drilling Company as an Illinois corporation to acquire and operate oil and gas wells. Headquarters have been established on Main Street, St. Elmo.

DR. F. L. CARNAHAN, of Pennsylvania State College, and Harry M. Rugg, automotive engineer for the Pennsylvania Grade Crude Oil Association, addressed a producers forum at Oil City, Pennsylvania, last week arranged by the association.

A. A. EASON, Joe Slivka and Lois Tober Slivka last week organized A. A. Eason Drilling Company as an Illinois corporation with headquarters in Mt. Carmel.

M. B. SWEENEY, general agent in charge of Sun Oil Company's Southwest division office at Dallas, has entered a Dallas hospital for the treatment of an ailment that has impaired his health for some weeks. He is one of the oldest employees of the company.

ED. J. ZILKEY, East Texas operator, has transferred headquarters and his place of residence from Tyler to Fort Worth.

A. T. (CAP) McDANNALD, Houston independent operator, and D. M. Davis, Pure Oil Company geologist at Houston, are in New Mexico, hunting deer on McDannald's ranch.

FRANK BUTTRAM, president of Independent Petroleum Association, will address the Kansas body of the association at Wichita, November 28.

MARK FEENEY, drilling contractor of Oklahoma City and Ardmore, Oklahoma, is in an Ardmore hospital for treatment of auto crash injuries.

GEORGE H. ECHOLS, Houston operator, was married to Miss Helen Sparrow in Parsons, Kansas, on November 23. The couple are honeymooning in New York.

MRS. JOHN MORAN, widow of the financier of the Richburg Hill wildcat which opened the great Allegany County oil field, northwest Pennsylvania, last week celebrated her 84th birthday at her home in Bolivar, New York. Mrs. Moran witnessed the growth of the petroleum industry from its inception to its present international scope. Stories of the early days of the game are her enjoyment.

STEPHEN and FRANK REELE, Dallas brothers engaged in drilling a wildcat near Dawson, East Texas, were injured November 22 in an auto accident near Corsicana.

DIED:

JOE A. KELL, 44, Wichita Falls business man and a vice president of Deep Oil Development Company, was killed November 21 near Wichita Falls when his automobile was involved in a mishap.

FORREST HATFIELD, 42, geologist for Ambassador Oil Corporation, Fort Worth, died November 21 in a veteran's hospital at Waco, Texas.

FRED D. BOSTAPH, 61, former purchasing agent and later sales manager of the Texas Pacific Coal & Oil Company, died November 22 of a heart ailment at his Fort Worth residence. He had been ill for about 3 years.

J. PAT BARKLEY, 56, pioneer drilling contractor, was found dead November 16 in a Wichita Falls, Texas, hotel room. Barkley, who had been in ill health for several months, was successful in the Corsicana and Burkburnett booms.

LIGE LAMB, 59, superintendent in the Healdtown, Oklahoma, field for Roy M. Johnson interests, died last week in the Veterans' hospital at Sulphur, Oklahoma.

W. E. REARDON, 58, pioneer in development of the natural gas industry in Louisiana and Arkansas, died at his home in Monroe, Louisiana, November 16. He was general superintendent of the Columbian Gasoline Corporation and of the Col-Texo Gasoline Corporation. A native of Kane, Pennsylvania, he had served as vice-president of the Natural Gasoline Asociation, and was a member of the American Petroleum Institute and of the Mid-Continent Oil and Gas Association.

Gasoline market weakens; other products are firm

The principal development last week in the market situation was a weakening of tank car prices of low octane gasoline in the Middle Western marketing territory. A few refiners in the Chicago area lowered their quotations on 62 octane and below by ¼ cent a gallon, pushing the minimum price in the district from 4¼ down to 4 cents a gallon. However, other refiners were maintaining former quotations, which ranged in some instances up to 4¾ cents for the low octane gasoline.

At the refineries in Oklahoma and Kansas, meanwhile, quotations on all grades of gasoline remained mostly unchanged. Likewise, no changes in gasoline prices occurred on the Gulf Coast, although the market was extremely sluggish.

The weakening of the gasoline market in the Middle West was not particularly surprising, in view of the fact that gasoline stocks are substantially larger than necessary, with prospects of continuing excessive during the winter.

Fuel Oil Markets

The markets for heating oils have continued strong, with tank car marketers reporting good movement of supplies against contracts. Comparatively small stocks of the light oils apparently are materially responsible for the firm markets.

PRODUCT PRICES

REFINED GASOLINE

	Range Last Week (Cents a gal.)		Late Week Before	Changes from Week Before
Oklahoma Refineries:				
62 Octane and Under	4½	4¾	...	...
63-66 Octane	4¾	5	...	...
67-69 Octane	4¾	5¼	...	...
70-72 Octane	5¼	5½	...	...
Mid-Western Tank Car:				
62 Octane and Under	4	4¾	—¼	...
63-66 Octane	4⅜	4¾	...	...
67-69 Octane	4½	5⅛	...	...
70-72 Octane	4¾	5⅜	...	...
NATURAL GASOLINE				
Grade 26-70:				
F. O. B. Group 3	4¼	...	...	...
F. O. B. Breckenridge, Texas	4	...	...	...
KEROSENE				
Oklahoma Refineries:				
41-43 water white	3½	4¼	...	...
42-44 water white	3⅝	4⅝	...	...
Mid-Western Tank Car:				
41-43 water white	3½	4	...	...
42-44 water white	3⅝	4¼	...	...
FUEL OILS				
Mid-Western Tank Car:				
Range Oil	3⅜	3⅞	...	...
No. 1 Prime White	3⅜	3¾	...	...
No. 1 Straw	3¼	3⅜	...	...
No. 2 Straw	3⅛	3¼	...	...
No. 3 Straw	3	3⅛	...	...
No. 5 (per bbl.)	65	...	...	...
No. 6 (per bbl.)	45	...	...	...

In the Chicago territory, several refiners last week advanced prices ⅛ to ¼ cent a gallon on range oil and No. 1 fuel oils. These advances were made after quotations had been increased similarly by some refiners in Oklahoma.

Some weakening of the market for heavy fuel oil was indicated at the middle of the week, when a Gulf Coast refiner lowered his quotation for Grade C bunker oil in cargoes from $1 to 95 cents a barrel. However, other refiners continued former quotations, which ranged from 95 cents to $1 a barrel.

Lubricants remain the strongest section in the market structure. Supplies still are scarce, inventories being the smallest for many years. Refiners in the Mid-Continent as well as in Western Pennsylvania are unable to fill the heavy market requirements, and they have business booked far ahead. Neutral oils are particularly difficult to obtain for immediate shipment. Demand for bright stock, in contrast, is not quite as urgent as heretofore, as shipments abroad have been delayed by lack of boats. It is expected, however, that this interruption of the movement of exports will be only temporary and that shipments will proceed shortly, upon arrival of boats from Europe for picking up the oils.

United States Crude Oil Production

Estimates Compiled by THE OIL WEEKLY

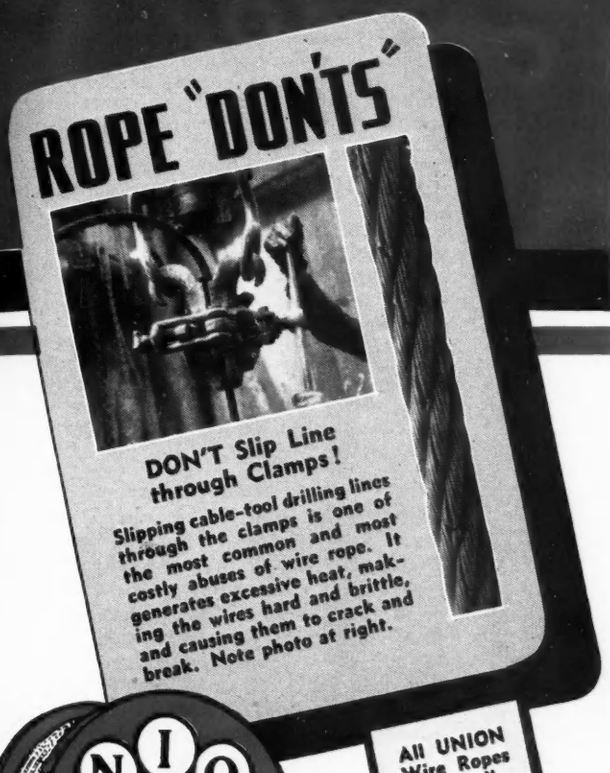
DISTRICT OR STATE	Bureau of Mines Estimate of Daily Demand (Nov.)	State Allowable in Nov.	BARRELS DAILY FOR WEEK ENDED Nov. 25	Nov. 18
TEXAS—				
Texas Panhandle	.....	.....	74,350	78,150
North Texas	.....	.....	94,650	82,200
West Central Texas	.....	.....	34,400	27,350
West Texas	.....	.....	264,550	222,000
East Central Texas	.....	.....	95,700	86,250
East Texas Field	.....	.....	493,250	398,200
South Texas	.....	.....	236,400	195,500
Texas Gulf Coast	.....	.....	243,200	213,250
Total Texas	**1,444,000**	**1,396,225***	**1,536,500**	**1,302,900**
CALIFORNIA—				
Long Beach	.....	.....	42,300	44,100
Santa Fe Springs	.....	.....	26,400	26,600
Huntington Beach	.....	.....	26,100	28,100
Dominguez	.....	.....	19,900	19,900
Ventura Avenue	.....	.....	38,300	36,800
Midway-Sunset	.....	.....	49,400	52,300
Kettleman Hills	.....	.....	51,900	54,000
Wilmington	.....	.....	85,000	85,300
Others	.....	.....	272,900	278,100
Total California	**596,000**	**599,000†**	**612,200**	**625,200**
OKLAHOMA—				
Oklahoma City	.....	.....	105,900	109,200
Seminole Area	.....	.....	108,100	108,920
Fitts	.....	.....	19,900	20,200
Others	.....	.....	193,225	192,685
Total Oklahoma	**429,000**	**429,000**	**427,125**	**431,005**
ILLINOIS—				
Other New Pools	.....	.....	321,500	330,500
Old Pools	.....	.....	8,000	7,900
Total Illinois	**303,000**	.....	**329,500**	**338,400**

DISTRICT OR STATE	Bureau of Mines Estimate of Daily Demand (Nov.)	State Allowable in Nov.	BARRELS DAILY FOR WEEK ENDED Nov. 25	Nov. 18
LOUISIANA—				
North Louisiana	.....	.....	68,825	66,050
South Louisiana	.....	.....	199,450	203,250
Total Louisiana	**259,000**	**258,994**	**268,275**	**269,300**
KANSAS—				
Burrton-Haven	.....	.....	11,050	12,150
Russell County	.....	.....	28,050	26,150
Silica	.....	.....	12,850	12,900
Others	.....	.....	132,900	128,300
Total Kansas	**169,000**	**170,600**	**184,850**	**179,500**
NEW MEXICO	**111,000**	**111,000**	**110,250**	**111,500**
EASTERN STATES—				
Pennsylvania Grade	.....	.....	75,950	76,250
Others, Eastern	.....	.....	26,900	26,950
Total Eastern States	**106,000**	.....	**102,850**	**103,200**
MOUNTAIN STATES—				
Wyoming	63,000	.....	62,900	61,250
Montana	16,000	.....	17,000	17,100
Colorado	4,000	.....	3,900	4,050
Total Mountain States	**83,000**	.....	**83,800**	**82,400**
ARKANSAS	**57,000**	**68,952**	**67,300**	**69,250**
MICHIGAN	**63,000**	**71,000**	**65,500**	**63,900**
MISSISSIPPI	.....	.....	**1,350**	**1,050**
‡Total 8 Prorated States	**3,128,000**	**3,104,769**	**3,272,000**	**3,052,555**
Total United States	**3,630,000**	.....	**3,789,500**	**3,576,505**

* Daily average, considering 11 shutdown days and various exemptions.
† Recommendation of Central Committee of California Oil Producers.
‡ Texas, California, Oklahoma, Louisiana, Kansas, New Mexico, Michigan, Arkansas.

For Drilling, we recommend —

PRE-FORMED for Rotary
ORDINARY for Cable-Tool


ROPE "DON'TS"
DON'T Slip Line through Clamps!
Slipping cable-tool drilling lines through the clamps is one of the most common and most costly abuses of wire rope. It generates excessive heat, making the wires hard and brittle, and causing them to crack and break. Note photo at right.

All UNION Wire Ropes meet all API Specifications

Experience has proved that pre-formed rope makes the most economical Rotary Drilling Line. This is because rotary lines are subjected to extra-severe bending stresses, drum-crushing, and tensile strains. Our pre-formed rope — sold under the name "UNION-formed" — is of stress-free construction, each wire and strand being given the exact helical form it is to retain in the finished rope. Containing no in-built stresses, it is far better able to withstand the stresses encountered in service. Its longer life will more than offset its higher first cost.

For Cable-Tool Drilling Lines, on the contrary, we definitely recommend ordinary fabrication, due to the fact that this fabrication has more rythmic "spring" — necessary for the cable-tool drilling stroke.

There is a "best" rope for each oil field service. Our field representatives are experts. Get their recommendations.

The photograph was taken at a well in Dickens County, Texas,—Bond D. Jones, contractor. The reels contain 6,500 feet of UNION 7/8" Cable Tool Drilling Line, and 5,000 feet of UNION 9/16" Sand Line. The men, left to right, are: Gordon Saulsbury, driller; Don Saulsbury, tool-dresser; Leo Saulsbury, truck driver; W. B. Saulsbury, co-partner; J. W. (Red) Lawrence, co-partner; Bond D. Jones, co-partner; and J. E. Briggs, Union Wire Rope Corporation.

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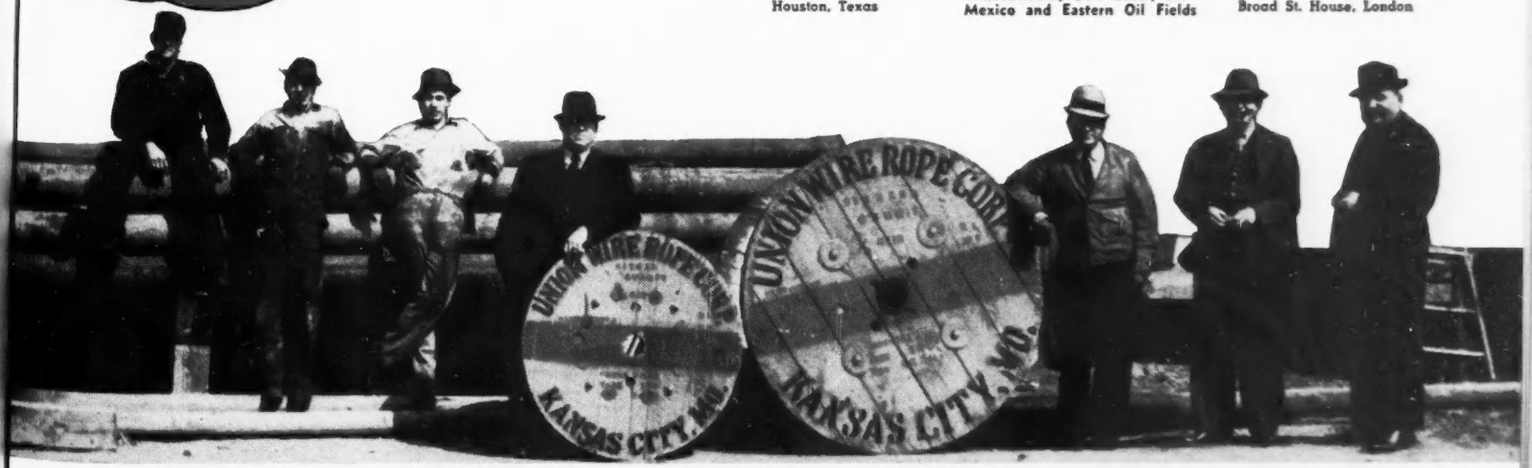


UNION WIRE LINES

The "ULTIMATE LOW COST WIRE ROPE"

Trends of United States Production and Stocks

Figures are from American Petroleum Institute weekly reports, except those on crude stocks, which are from Bureau of Mines weekly reports

	Crude Oil Production (Barrels Daily)	Crude Runs to Stills (Barrels Daily)	Crude Oil Stocks (Barrels)	Gasoline Stocks (Barrels)	FUEL OIL STOCKS	
					Gas Oil & Dist. Fuels	Residual Fuel Oil
1937:						
August 28	[5]3,731,450	3,425,000	309,506,000	66,997,000	112,111,000	
September 25	3,666,300	[5]3,455,000	307,974,000	65,620,000	116,472,000	
1938:						
March 19	3,433,550	3,080,000	306,380,000	[10]93,192,000	122,067,000	
August 27	3,388,500	3,255,000	285,029,000	71,754,000	29,747,000	117,179,000
September 24	3,251,150	3,220,000	280,278,000	68,605,000	31,183,000	119,285,000
October 29	3,237,500	3,145,000	275,824,000	67,590,000	33,690,000	120,029,000
November 12	3,243,250	3,180,000	273,394,000	[6]67,551,000	34,175,000	120,491,000
November 26	3,260,900	3,295,000	270,563,000	68,628,000	33,749,000	119,885,000
December 10	3,245,100	3,150,000	[6]269,509,000	68,587,000	32,068,000	118,711,000
December 31	3,201,450	3,115,000	273,024,000	71,695,000	29,082,000	115,741,000
1939:						
January 28	3,248,250	3,235,000	271,763,000	77,279,000	26,583,000	112,766,000
February 25	3,328,850	3,185,000	271,758,000	84,597,000	23,419,000	110,252,000
March 25	3,382,350	3,225,000	273,915,000	87,561,000	21,487,000	107,551,000
April 22	3,526,700	3,280,000	277,156,000	[2]87,769,000	21,058,000	105,035,000
April 29	3,568,200	3,405,000	278,440,000	86,794,000	[7]25,844,000	[7]108,409,000
May 6	3,580,900	3,275,000	[2]278,607,000	86,216,000	26,167,000	108,597,000
May 27	3,585,250	3,405,000	278,289,000	84,152,000	26,992,000	109,386,000
June 24	3,452,800	3,430,000	272,297,000	81,733,000	30,239,000	111,726,000
July 29	3,539,100	3,460,000	268,513,000	77,887,000	34,900,000	114,053,000
August 5	[3]3,909,400	3,445,000	268,982,000	76,431,000	35,601,000	114,512,000
August 26	[10]1,690,800	3,475,000	246,982,000	73,475,000	37,722,000	116,237,000
September 30	3,658,200	3,560,000	233,023,000	71,168,000	38,081,000	115,466,000
October 7	3,435,850	3,505,000	231,564,000	[6]71,152,000	38,549,000	114,397,000
October 21	3,771,550	[3]3,650,000	[3]229,127,000	72,122,000	39,358,000	115,060,000
October 28	3,498,500	3,520,000	230,453,000	72,660,000	39,562,000	114,786,000
November 4	3,501,350	3,465,000	230,994,000	73,262,000	39,460,000	115,036,000
November 11	3,797,200	3,536,000	230,037,000	73,271,000	39,333,000	113,015,000
November 18, 1939	3,592,000	3,515,000	.....	73,696,000	39,293,000	112,760,000
November 19, 1938	3,255,800	3,230,000	[4]273,394,000	69,423,000	[8]	[9]
Change in past year	+10.3%	+8.8%	—15.9%	—6.1%	—4.1%	—9.6%

[1] All time peak. [2] Peak for 1939. [3] Lowest since April, 1922. [4] Stocks, November 12, 1938.
[5] Peak prior to 1939. [6] Lowest for year.
[7] Prior to April 29, 1939, data did not include stocks at terminals, in transit, etc., except in California.
[8] Available data for year ago include only stocks at refineries, and not at terminals, in transit, etc., except in California. Those stocks on November 18, 1938, totaled 32,480,000 barrels and comparable stocks on November 18, 1939, totaled 31,164,000 barrels, or 4.1% less.
[9] Available data for year ago include only stocks at refineries, and not at terminals, in transit, etc., except in California. Those stocks on November 18, 1938, totaled 119,301,000 barrels, and comparable stocks on November 18, 1939, totaled 107,794,000 barrels, or 9.6% less.
[10] Lowest since October, 1922, due to the shutdown of six Mid-Continent states.

Gasoline stocks increased; fuel oils are withdrawn

The latest statistics of the industry, covering the week ended November 18, showed changes in stocks that were not quite desirable, although curtailment of crude production and refinery runs offered some encouragement.

Gasoline stocks, which have been consistently larger than necessary, were substantially increased as the fall-winter build-up proceeded.

Inventories of heating oils, which well might be considerably larger, were reduced a little as heavy seasonal consumption continued.

Stocks of the heavy fuel oils, used as fuel by industry and in transportation, were further drawn upon, although the inventory was hardly as large as desirable.

United States crude oil production declined sharply to 3,592,000 barrels daily in the week ended November 18 from 3,797,200 barrels the previous week, according to American Petroleum Institute estimates, in reflection of an extra day of oil field shutdowns in Texas at the middle of the month.

Crude runs to stills were lowered to 3,515,000 barrels daily in the week of November 18 from 3,536,000 barrels a day the week before, but were 8.8 percent larger than in the corresponding week last year.

Gasoline Situation

Production of gasoline remained large, output having been 12,189,000 barrels during the week, compared with 12,076,000 barrels the preceding 7 days.

The plant output was greater than the markets would absorb, and 425,000 barrels went to storage. That addition increased the gasoline stocks in the United States to 73,696,000 barrels, a supply 6.1 percent greater than that held a year previously. Such an increase is about in line with the gain that has occurred in gasoline demand. But the stocks were excessive a year ago, and they are, therefore, similarly excessive now.

Stocks of gas oil and distillate fuels were reduced from 39,333,000 to 39,293,000 barrels in the week ended November 18, and at the latter level were 4.1 percent lower than at the corresponding time last year. These stocks are smaller than desirable, as heating oil consumption is running around 15 percent higher this year than last year.

Crude Stocks Lower

Stocks of crude oil in the United States were lowered from 230,994,000 to 230,037,000 barrels in the week ended November 11, according to the Bureau of Mines, and at the lower level were back near the 17½-year low of 229,127,000 barrels reached in the week ended October 21. The crude oil inventory is approximately 16 percent smaller now than at this time last year.

Comparison of Permits Granted for New Wells

STATE	Week Ending Nov. 25	Total this Mo.	Total this Year	Total this Date Last Year	1938 Year Total
Arkansas	6	20	209	225	247
California	82	188	1,071	1,071	1,146
*Illinois	125	376	*496	.....	.....
Louisiana	40	148	1,307	1,134	1,214
Kansas	29	218	1,420	1,369	1,453
Michigan	23	128	1,327	868	953
*N. Mex	20	54	*240	.....	.....
Oklahoma	32	176	1,878	1,826	1,978
Texas	199	841	9,409	11,597	12,369
Total	556	2,049	17,306	18,090	19,360

* Data for Illinois dates from Oct. 15, 1939; that for New Mexico from Aug. 1, 1939.

Summary of Wells Completed in the United States Week Ending November 25, 1939

	Completions	Oil Wells	Gas Wells	Failures	Initial Production	Total 1939	Total this Date 1938
Alabama	....	....	....	....	.....	2	2
Arizona	....	....	....	....	.....	1	....
Arkansas	3	3	....	....	1,090	212	204
California	31	27	....	4	22,974	990	1,165
Colorado	....	....	....	....	.....	19	9
Florida	....	....	....	....	.....	....	....
Georgia	....	....	....	....	.....	1	1
Illinois	122	87	1	34	27,493	3,499	1,637
Indiana	11	8	1	2	1,380	254	153
Kansas	34	27	3	4	126,800	1,312	1,547
Kentucky	17	3	10	4	119	596	743
Louisiana	35	24	2	9	5,272	1,039	998
Michigan	30	18	1	11	4,259	1,366	916
Mississippi	2	1	....	1	750	14	19
Montana	3	....	1	2	.....	137	73
Nebraska	....	....	....	....	.....	1	1
New Mexico	20	19	....	1	9,372	606	489
New York	20*	20*	....	....	81	577*	632*
North Dakota	....	....	....	....	.....	....	1
Ohio	28*	11*	10	7	56	901*	865
Oklahoma	29	10	4	15	4,261	1,871	1,946
Pennsylvania	29*	29*	....	....	39	1,396*	1,942*
South Dakota	....	....	....	....	.....	....	....
Tennessee	....	....	....	....	.....	4	2
Texas	176	137	2	37	69,146	8,712	11,386
Utah	....	....	....	....	.....	....	4
West Virginia	18	4	11	3	7	518	650
Wyoming	2	1	....	1	1,704	140	103
Total this week	610	429	46	135	274,803	24,158	25,387
Total last week	581	401	40	139	200,738	23,548	24,829
Total this year	24,158	16,521	1,753	5,884	.....	....	....

* Includes water input or pressure wells.

[*Continued from page 43*]

strength and slow gel rate was used to control the gas, mud of this type showing a low water loss. Mud with higher gel strength showed a heavy mud loss to the formation. Low initial gel strength also tended to prevent swabbing action of drill pipe when coming out of the hole. Sand gave little trouble, as formations were hard. Phosphates in the chemical treatment of mud were extensively used to hold low gel strength. Metaphosphates and pyrophosphates were chiefly used, with caustic soda added to control the Ph value. Circulation normally could be started with pump pressures between 400 and 500 pounds, even after being out of the hole several hours.

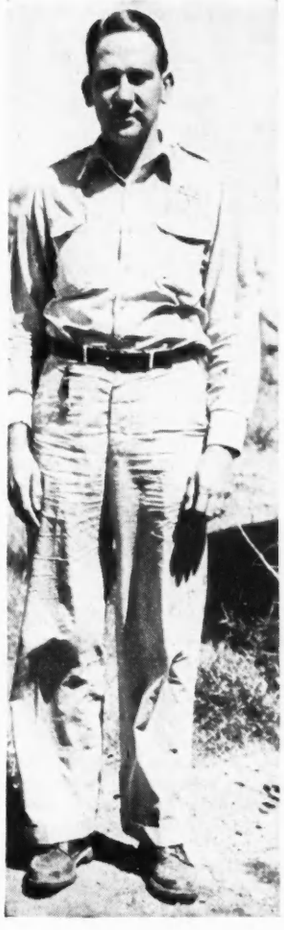
Equipment used in drilling Proctor was an interesting departure in some respects from that used in deep drilling elsewhere.

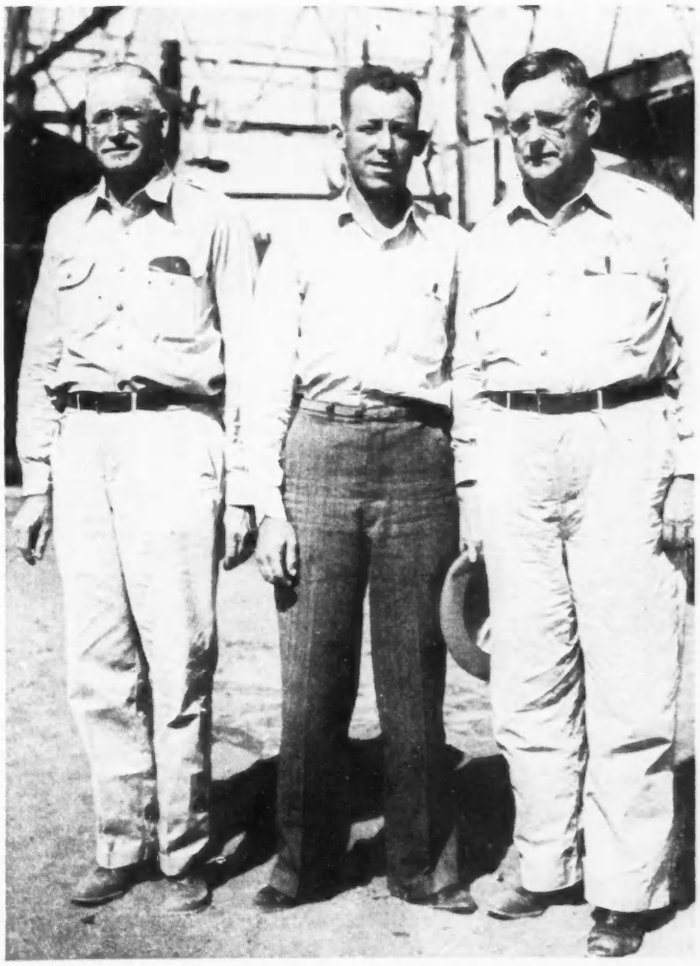
Diesel-electric power was used exclusively for drilling Proctor 1, the record standing as a tribute to prime movers of this type. The main power unit consists of two 225-300-horsepower, two-cycle, opposed piston Diesel engines, for operation at 900 to 1200 r.p.m. They are direct connected in tandem to 140- and 60-KW generators. Two 20-KW exciters are used, one for excitation and one for driving the auxiliary equipment.

The auxiliary unit is driven by an 8-cylinder, 120-horsepower, 4-cycle Diesel engine, which drives a 60-KW generator and a 5-KW exciter.

The motor output is controlled through generators by controlling the excitation. The control arrangement is such that the two 140-KW and two 60-KW generators, and the 60-KW auxiliary generator may be hooked up in various combinations. It is possible to run the 350-horsepower drilling motor with either or both 140's, both 140's and the auxiliary 60, both 60's, or both 60's and the auxiliary. This arrangement may also be applied to either pump. The generator fields are connected in series and not in parallel.

Fuel consumption runs from 400 to 900 gallons daily. The Diesel engines are radiator cooled and re-





These men played a prominent part in supervising the drilling of Continental's Proctor 1. From left to right are: Don Edwards, chemical and petroleum engineer; L. O. Hibbs, district foreman; C. A. Urice, tool pusher for Fain Drilling Company; A. B. Cook, district superintendent, and E. C. Wilbur, assistant division superintendent of the Oklahoma-Kansas division. All except Urice are with Continental Oil Company.

quire no additional tanks. The oil also is radiator cooled.

Two 14 x 18, 2-cycle, 150-horsepower, twin-cylinder, semi-Diesel engines are used as auxiliary units, one on the auxiliary draw works, and one on the spare pump.

Two 7¾ x 20 power pumps are used, one being driven by a 300-horsepower motor and the other by a 225-horsepower motor.

Surface equipment generally used was about standard weight and type ordinarily used for 10,000-foot drilling. Safety specialties were liberally used.

Proctor 1 is located in an area of closure on a geophysical (seismograph) structural trend paralleling the Wichita Mountains. The nearest production of any importance is the Sayre gas field, 16 miles west by southwest.

From a geological viewpoint, this well has added important information about the thickness and lithology of the Pennsylvanian series in the Anadarko basin of Western Oklahoma.

In this locality the thickness of the Pennsylvanian series has exceeded all previous etimates. Approximately 9450 feet was penetrated. This amount is surprising when it is considered that Pre-Cambrian granite outcrops only 23 miles south.

The accompanying table shows the subdivisions of the formations which have been encountered. The lithology of the Pennsylvanian series is similar to Texas Panhandle sections instead of the Oklahoma section, as it is developed in the Cement Pool. The section at Cement is predominantly sandstone and shale, whereas the section in the Proctor well is predominantly limestone with granite wash. One of the impressive features of the Proctor section is the more or less continuous occurrence of arkose from the top of the Cisco group to the lower part of the Strawn group. This demonstrates that the Wichita Mountains were repeatedly furnishing a part of the sediments throughout Pennsylvanian time.

Several shows of gas were noted between 10,700 feet and 13,400 feet, in thin sandy limestones and conglomerates, the porosity of which was relatively low (indicated by electrical survey). The value of the gas shows is not known at present. The gas pressure nearly caused the mud to be blown from the hole several times. It is planned to test all shows thoroughly before completing the well.

PIPE LINE NEWS

Ickes ired by pipe line over public domain without permit

Failure of Utah Oil Refining Company, Salt Lake City, subsidiary of Standard Oil Company (Indiana), to perfect its application before constructing a pipe line across public domain in Wyoming and Utah without a permit may subject that company to penalty for trespass now under consideration by Secretary of the Interior Harold L. Ickes.

Hearings on charges brought by the General Land Office were held before the secretary last week, at which officials of the company assured the department that the trespass was "unintentional" and explained that, after being awarded a contract for the purchase of oil from the Lance Creek field in July, 1929, applications for rights of way for a pipe line to carry the oil across the public domain were filed. The applications were suspended for lack of full information and the company, through an "oversight" proceeded to build the 450-mile pipe line, 142 miles of which was on the public domain, without official permission. The company also constructed 218 miles of telephone lines, three smaller feeder lines and three pumping stations without authority.

While he indicated that penalties imposed on the oil company will not be unduly heavy, Ickes took advantage of the incident to deliver a warning that the government would not tolerate unauthorized uses of the public domain.

"I think there has been too much disposition on the part of certain people at certain times to ignore the right of the government and to possess themselves of or use public property without due regard to the public's right and the government's trusteeship," he declared. "That is the sort of thing I have been trying to stop.

"I do not welcome such a precedent as will have been established in this case of an oil company going on the public domain and making use of it in a way not justified by the statutes. If this were condoned corporations could use public land just as if they owned that land in fee simple.

"In this instance, I don't think that there was any deliberate intent to violate the law or the regulations of the department. I think, however, that there was a high degree of carelessness. Perhaps people were not as regardful as they might have been of the rights of the federal government.

"We want, of course, to encourage business, we like new construction, but we like to proceed in an orderly way, and we don't want to create the impression on the part of anyone that, so far as the public domain is concerned, any individual or any corporation can go on and use it for their own purposes and disregard the rights and interests of the public.

"We have a good deal of this to contend with, not only so far as pipe lines are concerned, but so far as other interests are concerned. We want to cooperate here and we want to be helpful. It would be the proper thing to do to approach the government in that spirit and not jump the gun or take too much for granted."

Officials of the company assured the secretary that they would meet all requirements placed upon them by the department as a result of the violation, but insisted they had acted in good faith and, in filing the application, had sought to comply with the law and department regulations.

Interstate compact to meet on December 14

The next meeting of the Interstate Oil Compact Commission will be held in Wichita, Kansas, on December 14. This announcement was made last week by Ernest O. Thompson, chairman of the compact.

Prior to this time, the group had planned to meet in Michigan during the time the Illinois legislature was to have been in session considering proration laws for that state; however, Governor Horner has not yet called the legislature and the quarterly compact session is due.

Thompson said that he had wired invitations to numerous officials in Washington, asking them to attend the meeting and present any suggestions which they might have. Each state will be called on to report the progress it has made in the conservation field during the past four years.

"The meeting will in addition be one of preparation by the states for the fight of the states against federal control," Thompson said.

"It was suggested recently that the federal government join the compact. For the states this would be like getting in bed with a bear.

"The Oil Compact has made great progress. We have absolutely prevented overproduction of oil and that was the cause of all the excitement in the beginning. This should go to the compact's credit.

"Some people might say 'How about the Connally Act', but I call attention to the fact that the states set their own production figures and the Connally Act does not apply unless the state set quota is exceeded.

"The whole trouble is some people expect perfection. Federal control would be no more perfect that state control. It would be only a duplication of effort," he concluded.

Ask increase in Flour Bluff allowable

Costa Oil Company has asked that wells in the Flour Bluff field, Nueces County, be given an allowable of 40 barrels daily. At a railroad commission hearing last week, testimony was presented to show that the current allowable is 29 barrels net for each of the 109 wells in the field.

Humble Oil & Refining Company has scheduled nominations sufficiently high to cover purchase of the additional oil.

WORLD-WIDE DEVELOPMENTS

Edited by WM. V. GROSS, Associate Editor

Hungary

Hungary registers sharp increase in production

According to official statistics of the Bureau of Mines of the Royal Hungarian Ministry of Industry, Hungarian petroleum production during July, 1939, amounted to 126,742 quintals compared with 101,615 quintals during the preceding month. The total production during the first 7 months of the year was 645,183 quintals compared with 161,132 quintals during the corresponding period of last year. Total sales during the first 7 months of the year amounted to 611,195 quintals compared with 159,752 quintals during the corresponding period of 1938.

Lispe Leads

Of the petroleum produced during July, only 1487 quintals were produced in the government fields at Bukkszek, and 125,255 quintals in the fields at Lispe by Hungarian-American Oil Company. In the government fields 21 of the 39 wells were in operation at various times during the month. Hungarian-American Oil Company operated 17 wells continuously during the month.

It is reported that nearly three-fourths of the Hungarian domestic requirements for petroleum is furnished in these two fields, and given full play the existing wells could easily furnish the total demand for oil in the country. Operation in the government fields is considerably restricted on account of the lack of funds until the completion of the new state budget. For the same reason promising explorations in the Maramaros district, supposed to be the continuation of the oil fields in the former Galician district, now Poland, have been held up.

Ask to Wildcat

As a result of the success of Hungarian-American Oil Company's explorations in Transdanubia, which the company has leased for a period of 50 years, the Germans have applied for permission to explore on the plains in the Tisza-Danube river basin. Negotiations are still pending, but as the terms offered by the treasury, which are identical with those under which Hungarian American Oil Company is operating, appear unsatisfactory to the Germans, nothing definite is expected in the near future. The Hungarian state is unwilling to grant more favorable terms to the Germans than those granted to the American subsidiary company, which are reported to be satisfactory both to the government and the operating company.

In order to facilitate the transfer of the crude oil from Lispe fields to the Budapest refineries, the installation of a pipe line is planned at a cost of approximately 10,000,000 pengo. The line is expected to be about 300 kilometers long.

During the month under review Hungary produced 4,557,017 cubic meters of natural gas, compared with 3,948,647 cubic meters during the preceding month. Production during the first 7 months of the year totaled 23,005,781 cubic meters, compared with 3,078,672 cubic meters during the corresponding period of last year. The consumption of natural gas during the month amounted to 1,310,616 cubic meters compared with 982,334 cubic meters during the preceding month.

The consumption of natural gas during the first 7 months of the year amounted to 7,702,158 cubic meters compared with 3,078,672 cubic meters during the corresponding period of 1938.

Canada

Hope McColl-Frontenac will build West Canada refinery

Following its purchase of properties of The Texas Company of Canada, West Canadian oil operators recently were hopeful for a statement of policy from McColl-Frontenac Oil Company which would lead to an enlarged market for crude from Turner Valley and other western fields. McColl-Frontenac, as of February 1, 1940, is taking over The Texas Company's properties centered in the western provinces of Saskatchewan, Alberta and British Columbia. The consideration was approximately $1,850,000.

Construction of a refinery in Western Canada by McColl-Frontenac, a project not announced but believed likely, would provide an enlarged market for Alberta producers and stimulate development in Turner Valley and on other Alberta structures. It would result in a corresponding market loss to Montana operators.

Whereas a few years ago practically all petroleum products sold in the West Canadian provinces were imported from the United States, principally from Montana, or refined in Western Canada from Montana crude, the rapid growth of the Turner Valley field of Alberta brought a switch on the part of companies with refinery facilities in the dominion to Alberta crude.

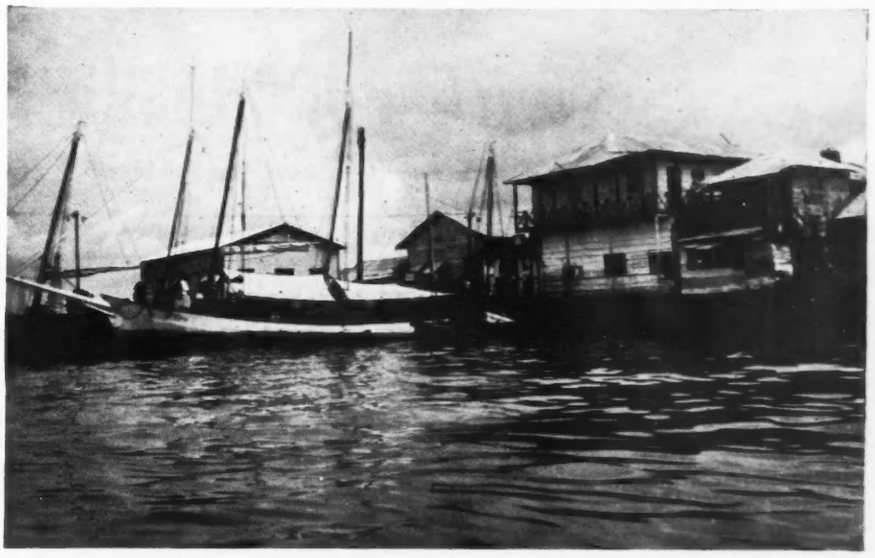
The outstanding exception to the now general rule of distribution of petroleum products in eastern British Columbia, Alberta and Saskatchewan made from Alberta crude is The Texas Company, enjoying a large business in the West Canadian provinces. The Texas Company is without refinery facilities in Canada and has continued to import refined products from Montana.

Mc-Coll-Frontenac, a Canadian company, has two large refineries, one at Toronto and the other at Montreal. Its distribution, heretofore, has been confined to Eastern Canada.

South Wales

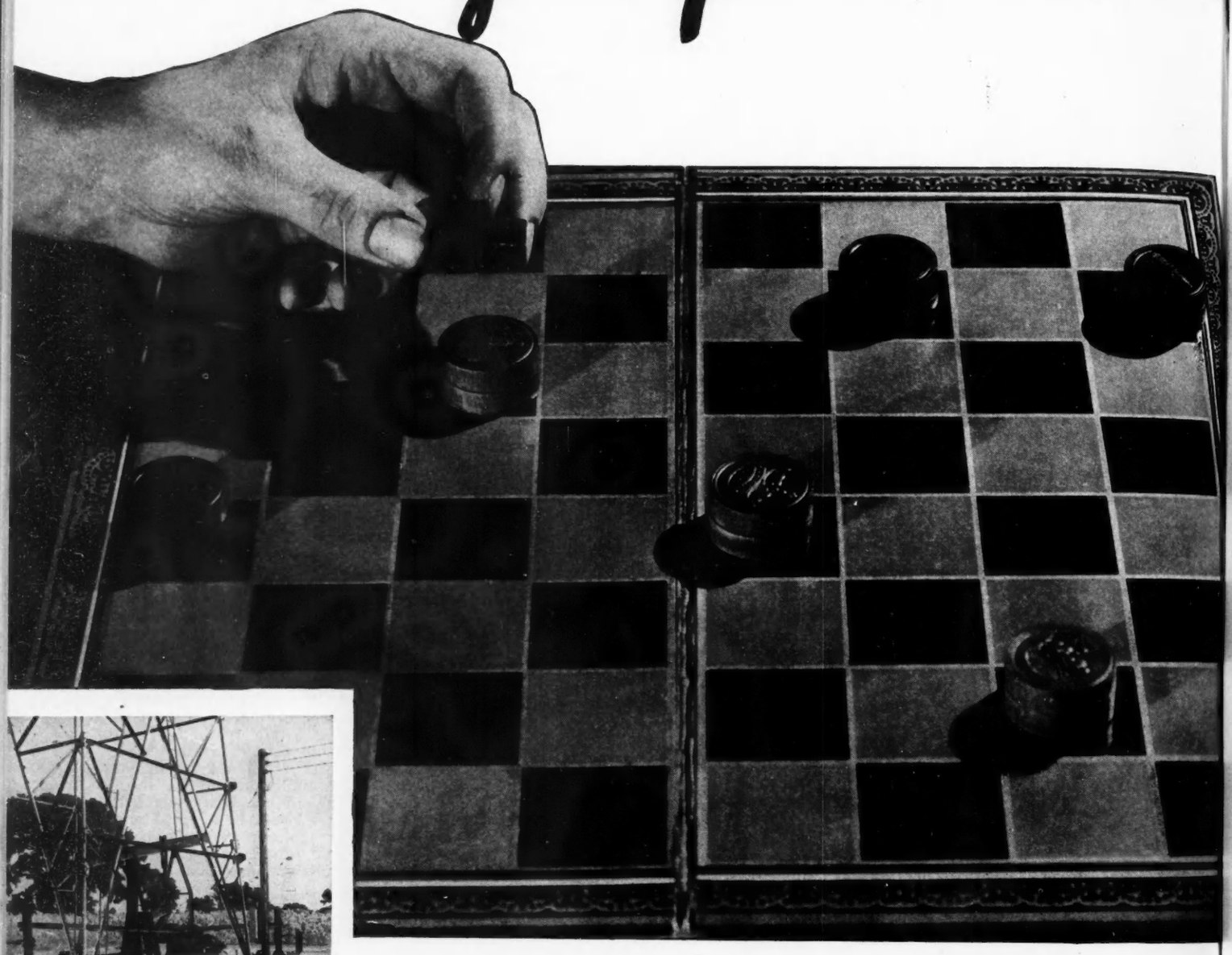
New method of extracting oil from coal

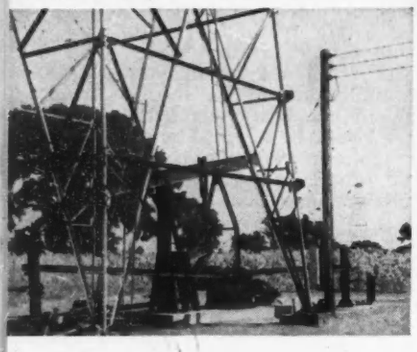
A development of special interest to South Wales is a new method of extracting oil from coal. This has been devised by two Swansea scientists working in conjunction with a local specialist in the subject. It was claimed that the process could be adapted and used at every colliery irrespective of the type of coal raised, and that about 70 percent of the weight of coal reacted would be oil.



Lake Maracaibo view of Lagunillas, oil village on stilts, which burned to the water in mid-November despite efforts of oil company and Venezuelan government personnel.

YOU'RE *Jumps* AHEAD





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ILLINOIS looks forward to another drilling boom as a result of proving deep Devonian lime production in Lake Centralia and discovering two new pools during the week, one in Wayne and one in Clark County. Besides, Cordes pool, Washington County, got a major extension. More than 18 fields were either joined or extended in Kansas, which also reported a new strike at Coal Creek, west of West Prusa, and several encouraging wildcat showings. South Louisiana's St. John the Baptist Parish looked forward to its first field as a LaPlace wildcat prepared for a production test; Happytown, St. Martin Parish, recorded a flowing wildcat while another in the Delta Farms area of LaFourche Parish looked good. New sands were reported for Venice and Fausse Point. Pottawatomie County, Oklahoma, had a 250-barrel wildcat north of Gray production; Osage County got a small spot opener near Fairfax, and a southern extension loomed for Ponca City, Kay County. Duggan and Slaughter fields of Cochran County, West Texas, were linked, while on the coast a possible strike appeared near Alvin, Brazoria County. Michigan obtained two extensions, one of ½ mile for Overisen-Oldebekking, Allegan County, another of ½ mile for Walker, Kent County.

Illinois

Two new pools found; rush development of Devonian

Mattoon.—Two new Illinois oil pools seemed assured late last week, and developments in the new areas shared attention with discussion of deep possibilities in the basin and a relatively new area in White County. Also, a wildcat on the west side of the basin was showing favorably; a possible fifth producing horizon was opened in the Lake Centralia-Salem pool, and Cordes pool of Washington County was extended ½ mile south.

Permits issued during the week indicated opening of the Devonian lime in Lake Centralia-Salem pool of Marion County would bring about rapid development of this new horizon despite the fact that 5700 of the pool's approximately 8000 productive acres are held by a single operator—The Texas Company. While independents holding small roadway, school and church tracts scattered throughout the field prepared to start new wells to the Devonian, majors took out permits for tests on adjoining tracts. Besides The Texas Company, major companies active in the field are Magnolia Petroleum Company, Ohio Oil Company and Shell Petroleum Company.

The 10-acre spacing plan being adopted in the pool indicates another 5000 wells will be drilled in this area, and probably all within the next two years. In the opinion of some geologists, the Devonian will not extend over as great an area as is covered by the Benoist, Aux Vases and McClosky pays, but extra wells forced to offset small tracts will probably raise the average to more than a well to every 10 acres on present proven acreage.

Kingwood Oil Company's J. O. Shanafelt 18-A, NW NE 20-2n-2e, which opened the Devonian pay in the pool a week ago, was rated as an 1800-barrel well. It was producing at the rate of 1500 barrels a day a week after being brought in. Kingwood has obtained permit for J. O. Shanafelt 19-A, and starts were made or permits obtained for tests by The Texas Company, whose acreage offsets the 80-acre Kingwood lease on the north, northeast, northwest, east, south and southeast; by Magnolia Petroleum Company on the south and east, and by Ohio Oil Company on the southwest.

St. Louis Believed Tapped

Along with opening of the Devonian lime in Lake Centralia-Salem, the St. Louis, lying directly below the McClosky, was believed tapped by several wells that were deepened from the latter horizon. All started at between 500 and 700 barrels a day. Samples taken from the wells were described as oolitic, and in the opinion of some geologists the formation is merely a lower McClosky pay.

In further development of the field, present McClosky wells will, for the most part, be deepened to this St. Louis or lower McClosky pay, and entirely new wells drilled to the lower Devonian. The Devonian well will be the third for a given location, one well normally tapping the Benoist and Aux Vases sands, another the McClosky and St. Louis.

Although it probably will not be tested for many months, Illinois operators are looking toward an additional pay horizon in the Lake Centralia-Salem pool. The St. Peter, corresponding to the Wilcox in Oklahoma, is considered by many operators to have ever greater possibilities in this and other Illinois basin areas than any horizon thus far opened. A sand horizon, the St. Peter would have a longer life than McClosky, St. Louis and Devonian lime wells. Between the Devonian and the St. Peter is the Trenton, corresponding to the Viola limestone in Oklahoma. The Trenton is productive in some sections of Illinois and Indiana and is the formation in which one of this week's wildcats was nearing completion. The St. Peter, in the deep part of the Illinois basin, would be found at about 6000 feet.

The accompanying map shows the location of Illinois fields and the formations from which they produce at present. Many of these fields will be tested for Devonian production, now that it has been proven productive at Salem. Accompanying the map is an east-west cross-section across the Illinois Basin, indicating the approximate depths of deeper pay zones. Also appearing in this issue is a typical geological log of the territory. These illustrations are of particular interest at this time because of the deeper production found in the Devonian at Salem, and due to the anticipated testing of deeper horizons in many other spots.

Wayne County Strike

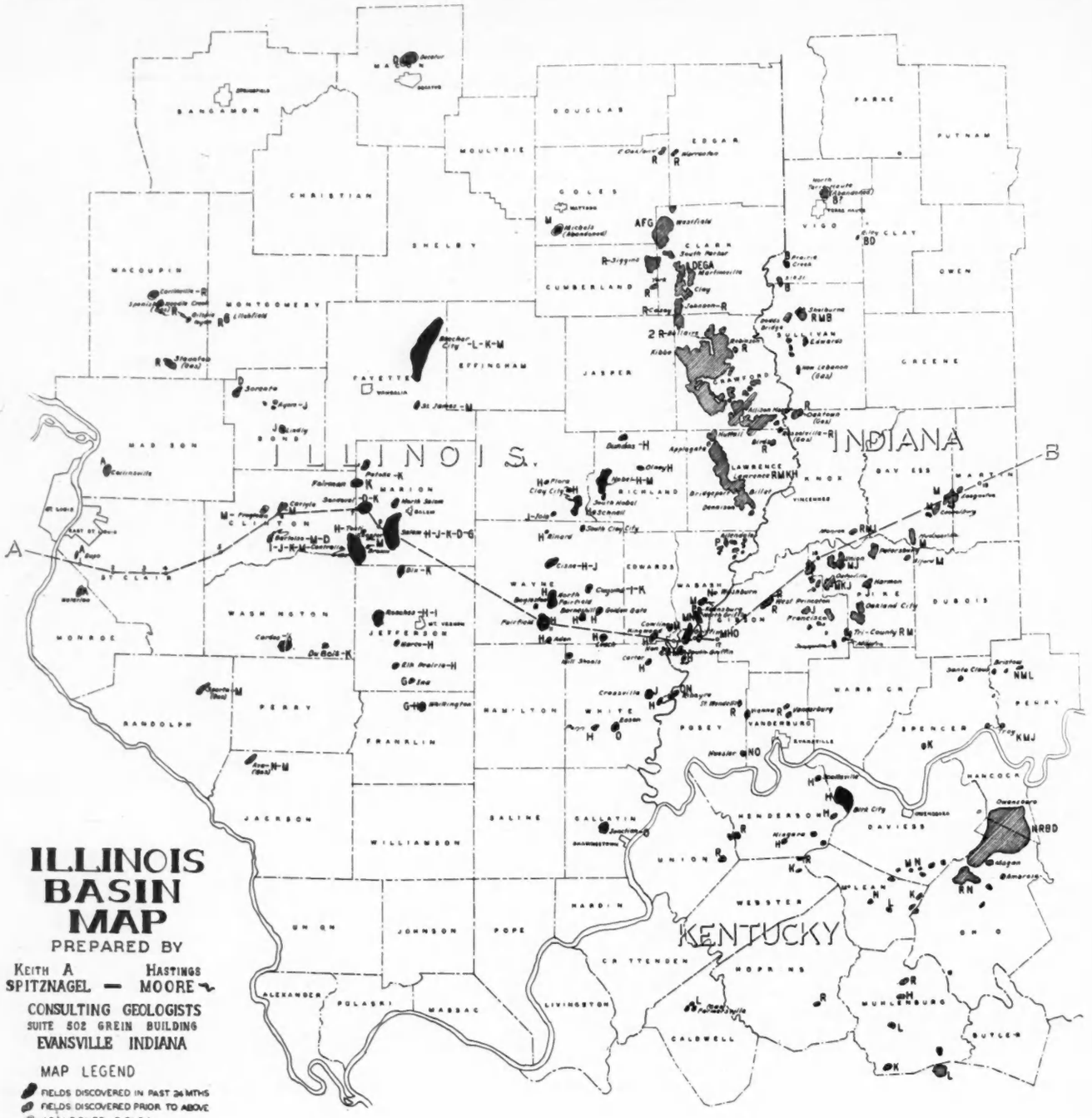
In Wayne County, Cuyuna Oil Corporation's J. B. Vol Borah 1, C E½ NE NE 23-1s-8e, Jasper Township, 6 miles northeast of Fairfield, flowed by heads after swabbing the Rosiclare and McClosky pays. Saturated sections were found at 3129-33 feet, 3167-76 feet, 3180-85 feet and 3203-06 feet. The wildcat was running tubing for a pumping test after acidizing with 2000 gallons.

The week's second wildcat showing for a pool opener was W. R. Miller's Booth 1, SE NE NW 17-11n-14w, in the old Westfield-Casey area of Clark County. It made several heads of 40 to 50 barrels after a heavy shot in Trenton lime at 2394-2462 feet and was estimated as a 200-barrel well. Pumping equipment was being installed.

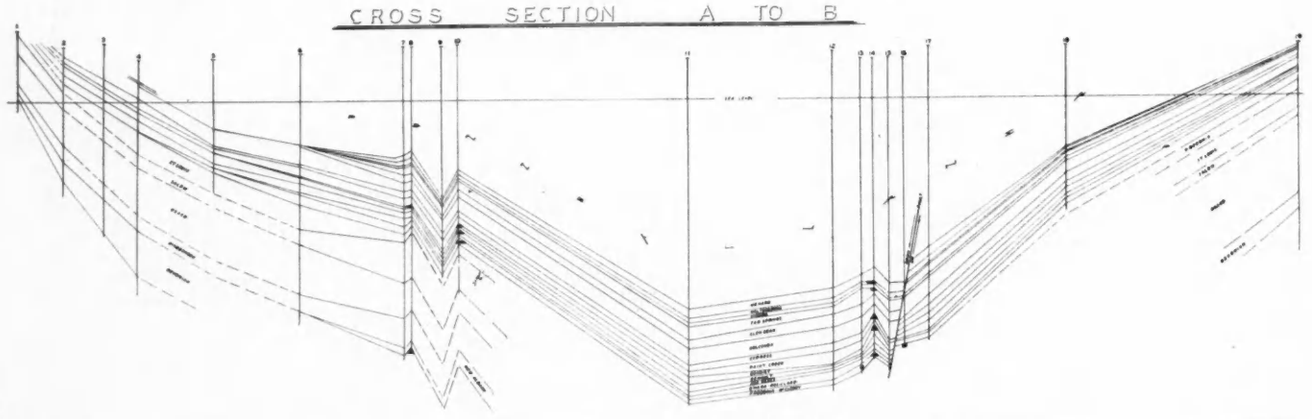
On the west side of the basin, Smith, Lee & Scharf's (Bob Benny's) Scharf 1, C NW SW SE 27-7n-4w, picked up an oil show at 1437 feet while drilling a wet hole with cable tools toward the Devonian, expected between 1750 and 1800 feet. The wildcat had been tied up several weeks with a fishing job, and later drilled by a lost bit. Operators were underreaming 6⅝-inch casing from 1300 feet to bottom before drilling into the show. This test encountered a gas flow of about 650,000 cubic feet in the Pottsville sand at 561-98 feet a month ago.

Shell Oil Company's Mary Dix 1, NW NE NE 19-3s-1w, near DuBois, Washington County, reported a week ago as a prospective pool opener, swabbed 20 barrels of oil and no water in 13 hours. Production is from six feet of Benoist sand, topped at 1359 feet. The wildcat is ¾ mile east of a wildcat drilled early in the year which had recovered some non-commercial production from Cypress sand. The area at that time had been designated the Musial pool, but henceforth will be known as DuBois pool.

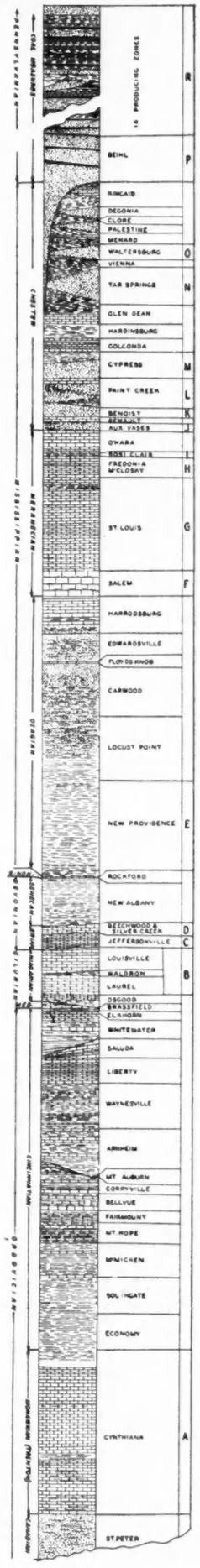
The new producing area south of Carmi, White County, opened 2 months ago with a 12,000,000 cubic foot gas well from the Waltersburg sand, is the scene of feverish activity that may bring about its classification as the



CROSS SECTION A TO B



GENERAL SECTION



most important new area opened this year. The pool now numbers 2 gas wells and 5 oil producers, the most recent being Harry Blackstock's North Storms 1, NW NE SE 23-6s-9e, which had an initial flow through casing of 187 barrels in 17 hours.

Exchange Oil Company's K. Storms 1, SW SW NE 14-6s-9e, topped the Waltersburg at 2237 feet, set casing to 2251 feet with bottom at 2276 feet. Exchange is a subsidiary of Sinclair Prairie Oil Company. Eason Oil Company and Bill Angle's Storms 3, NE NW SE 14-6s-9e, had Waltersburg sand saturation between 2240 and 2278 feet and set casing to 2250 feet. These operators discovered the pool. R. E. Johnston's F. H. Storms 1, NE NW SE 23-6s-9e, was coring for the Wal-

Illinois Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Clay County—		
Pure, Clay City Bank 9A, c e sw se 6-2n-8e	516	3130
Smith 11B, se se ne 7-2n-8e	235	3050
Clinton County—		
Lengafelter & Williams, Hanseman 1, sw se se 1-1n-1w	*	1616
Edwards County—		
Longhorn Oil Co., Kraft 1, sw nw sw 31-1s-10e	*	3120
C. G. McFadden, Bump 1, c se sw 34-2s-14w	240	2643
Magnolia, Etheridge 1, sw nw sw 18-3s-14w	19	3140
Fayette County —		
Parrott & South, Guffey 1, ne nw ne 1-5n-2e	56	1630
Carter, Durbin 6	624	1586
Tissey 7	756	1578
Tissey 9	504	1577
Cummings 8	702	1585
Brown 6	672	1588
McCann 3	570	1594
Durbin 5	372	1576
Dial 2	37	1539
Hogan 3	56	1532
Bauer-Smith 2	306	1524
Boles 5	664	1545
Wright 10	168	1513
Wright 9	216	1568
Wright 5	360	1576
Wright 6	342	1596
Sinclair 3	198	1611
Phillips 1	37	1490
Helen Welker 8	60	1577
Mary Welker 6	48	1521
Hoar 3	246	1523
Williams 4	264	1588
N. M. Hopper 10	192	1480
Hobbs 15	396	1595
Hobbs 9	500	1535
Deal 6	456	1565
Deal 8	528	1509
Ramsey-Hopper 7	432	1582
Dial 33-3	I	1574
Mills 33-2	I	1508
Holley 12-5, se cor se ne 11-8n-3e	I	1525
Hopper 22-2, nw nw ne 22-8n-3e	I	1585
Williams 22-4, sw ne ne 22-8n-3e	I	1558
Williams 22-8, sw ne se 22-8n-3e	I	1515
Bauer 23-5, sw sw nw 23-8n-3e	I	1590
Gulf, Small 6, c sw se se 25-6n-2e	168	1610
Small 7, c ne nw ne 36-6n-2e	103	1614
Small 8, c se sw se 25-6n-2e	165	1603
Stewart Dr. Co., McCloy 3, se ne ne 34-8n-3e	*	1598
McCloy 4, ne se ne 34-8n-3e	*	1596
Texas, Neathery 1, ne ne nw 6-6n-3e	280	1565
Yakel 4, sw se sw 6-6n-3e	189	1562
Chrisman 1, nw ne nw 7-6n-3e	168	1582
Chas. Lowry, Breeze 1, se nw se 1-7n-2e	*	1635
Nash Redwine et al, Logue 3, ne se se 13-7n-2e	8	1559
Franklin County—		
W. R. Hayes, Old Ben Coal Corp., 1, se sw se 26-5s-1e	*	3101
Phillips, Boyle 1, ne nw se 19-5s-3e	*	3073
E. S. Atkins, Old Ben Coal Co., 1, sw se nw 21-6s-2e	*	3000
Jefferson County—		
Magnolia, Oslager 2, ne sw sw 22-2s-1e	227	2178
Johnson County—		
Coates et al, Albright 1, ne nw se 22-12s-2e	*	1747
Lawrence County—		
Kentucky Natural Gas, Anderson 1, c nw sw 17-4n-10w	¶1.42	1135
Walter Payne, Patrick Bros. 1, nw sw ne 28-4n-11w	*	2520
Marion County—		
Texas, Stroup 7, ne sw se 30-2n-2e	2382	1845
Canull 12, nw sw se 31-2n-2e	686	1916
Dunning 8, e nw se 31-2n-2e	672	1897
C. Reed 5B, sw nw se 31-2n-2e	525	1970
Tate 13, ne se sw 31-2n-2e	420	2010
Tate 5, ne sw sw 31-2n-2e	224	2048
Wayman 16, ne ne ne 31-2n-2e	455	1947
Friesner 12, nw ne nw 32-3n-2e	630	1917
Hays 5, e nw nw 32-2n-2e	140	1912
Farthing 5, c w½ ne sw 33-2n-2e	1050	2118
Sands 6, nw nw sw 33-2n-2e	294	2086
Sands 7, ne nw sw 33-2n-2e	315	2115
Friedrich 11B, se se ne 8-1n-2e	175	1865
Fyke 4, nw nw ne 17-1n-2e	105	1898
Meyer 3, s ne ne 17-1n-2e	14	2120
Ohio Oil Co., Murray 13, ne ne sw 7-1n-2e	200	1868
Big Four O&G Co., Dean 2, se sw sw 4-2n-1e	960	2981
Chaffin 2, nw ne nw 9-2n-1e	40	2987
Rockhill Oil Co., Foster 17, se sw sw 8-1n-2e	340	2078
Joe Ruck et al, Hawkins 1, sw ne nw 8-1n-2e	*	1260
Steele, Foster 1, nw sw sw 11-1n-2e	*	2277
Kingwood, Devore 6, ne nw nw 17-1n-2e	206	2126
Southwestern Oil & Gas, Benoist 22A, ne ne ne 8-2n-1e	2060	2959
Menhaul et al, Goodwin 1, ne nw se 8-2n-1e	198	2993
Dunn et al, Meredith 1, nw ne nw 10-2n-1e	*	3369
Ewing et al, McMackin 1, nw se sw 6-2n-3e	*	2430
Tri-B Drilling Co., Dukes 1, ne ne nw 17-3n-1e	*	1509
Shell, Lutz 2, nw nw se 18-3n-1e	156	1442
Centralia Refining Co., Henning 1, c sw sw 20-3n-1e	*	1580
Monroe County—		
Chas. Judd, Kolmer 1, sw cor tax lot 6, survey 641, claim 1645, 2s-10w	*	576
Perry County—		
Sivinmel, Kinney 1, ne ne nw 13-5s-2w	*	1582
Richland County—		
Pure, Coen 20, nw nw sw 4-3n-9e	434	2582
Hunley 1, c se se se 22-4n-9e	17	2605
St. Clair County—		
Carey et al, Pusilie 1, lot 28, 1n-10w	30	577
Wabash County—		
Fitzpatrick-Hayes et al, Hinderliter 1, ne ne nw 9-1n-13w	*	2765
Magnolia, Wallace 1, ne ne ne 23-1s-13w	6	1956
Blalock et al, Whitaker 1, ne nw se se 8-2s-13w	*	2458
Continental, Schultz 1A, ne ne se se 8-2s-13w	133	2444
Fotiades, Schultz 1, ne ne ne 8-2s-13w	*	2905
Centralia Ref. Co., Beard 1, se se sw 9-2s-13w	93	2457
Berringer 1, se se sw 9-2s-13w	87	2457
Butte 1, ne se sw 9-2s-13w	29	2456
Dr. Dallas, Lovelette 1, ne se sw 9-2s-13w	200	2455
D. & H. Drilling Co., Bump 2, nw se sw 9-2s-13w	80	2459
Bump 3, sw ne sw 9-2s-13w	250	2442
Bump 4, nw sw sw 9-2s-13w	380	2446
Miller & Murdock, Epler 2, se ne sw 9-2s-13w	50	2464
Meyers et al, Lovelette 2	185	2464
Dallas Hawkins, Cowling 1, se ne se 18-2s-13w	*	2808
Washington County—		
Shell, Bernreutor 1, sw sw nw 14-3s-3w	13	1270
Magnolia, Kurwicki 9, se se se 15-3s-3w	100	1263
Woldridge, Lyons 1, c nw ne sw 20-3s-3w	*	1343
Ohio, Bielatowicz 2, se se ne 22-3s-3w	76	1300
Wayne County—		
Pure, Hubble 2, c e½ se sw 4-1n-8e	473	3095
Hubble 3, w nw ne 9-1n-8e	88	3110
Illinois-Mid-Continent, Cope 1, c se ne se 28-1s-7e	*	3367
Orie Dunlap, Vaughn 1, ne ne sw 34-2s-8e	76	3445
White County—		
H. H. Weinert, Inc., Curd 1, nw sw ne 29 3s-8e	100	3401
T. F. Marrow, Gray Trustee 1, ne ne se 30-3s-8e	46	3366
J. W. Carter et al, Johnson 1, sw ne ne 12-4s-10e	*	3173
Johnson 1, ne sw ne 12-4s-10e	210	3201
Sun Oil Co., Garner 1, sw se sw 1-5s-10e	20	3005
Continental, Hanna 1, se se nw 28-5s-9e	*	3143
Williamson County—		
Adams & Doran, Moore 1, se ne ne 4-10s-3e	*	2462

*Failures; †Junked; ¶Million cu. ft. gas.
"I" indicates gas intake well.

tersburg. Twelve tests were active in this area, not including locations.

Considerable acreage, both leases and royalties, have changed hands in the Carmi area, and many tests are due to be drilled. A large structure is said to exist in the region. To date this region has shown the largest volume of gas found in the current Illinois play. Because it is producing from a sand body and not a lime horizon, Carmi is considered especially attractive.

Magnolia Petroleum Company's Peter Kozuzek 1, NW SE NW 26-3s-3w, extended the Cordes pool of Washington County a half-mile south when it cored excellent Bethel sand saturation above 1275 feet.

In Centralia pool, on the Marion-Clinton County line, Taylor Drilling Company, as contractor, was coring sand believed to be the Rosiclare at 1550 feet in Lewis Lilly et al's (Cunningham's) Grim 1, 450 feet from the south line and 725 feet from the east line, NE Lot 24, Block 1, Pullen Subdivision No. 3, Centralia townsite. This well had been producing from the Benoist and has 7-inch casing set to 1357 feet. This well, in a sand pool developed early in the state's new development era, will be taken to the Devonian. It is partially financed by Centralia businessmen.

An attempt to gain commercial St. Louis lime production in the Golden Gate pool of Wayne County was unsuccessful. New Penn Oil Company's Wagoner 1, 350 feet from the north line and 250 feet from the west line, Section 30-2s-9e, discovery well of the pool, topped the St. Louis at 3490 feet after being deepened from the McClosky at 3441 feet. When it pumped 3 barrels of oil and 8 barrels of water in 24 hours, the company continued the well as a McClosky producer.

Kentucky

Wildcat near Madisonville to be deepened 150 feet

Owensboro.—Central States Oil Company's W. J. Cox Heirs 1, 5 miles southeast of Madisonville, Hopkins County, inactive for several months, will be drilled an additional 150 feet from its present bottom at 2092 feet in an effort to obtain commercial production.

Kentucky Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Butler County—		
South Penn, McPherson 1	*	879
H. Wheeler, Cooper 2	9	504
Daviess County—		
Baldwin Oil Co., Igleheart 1	100	1465
Ellis & Huff, Ambrose 1	*	1265
Hart & Hart, Haywood 1	*	1175
Floyd County—		
Columbian Fuel Co., Tierney	¶.61	2010
United Carbon Co., Republic 790	¶.24	4082
South Shelby Land Co. 797	¶.06	3450
Hamilton Gas Co., Hatcher D-84	¶.30	2714
Fitzpatrick et al, Fitzpatrick 1	¶.25	1870
Hancock County—		
Flesher et al, Newman 1,	*	686
Knott County—		
Southeast Gas Co., Fugate 788	¶.20	2782
Midway Gas Co., Howard 1	¶.12	3023
Martin County—		
Huntington Oil Co. et al, Davis 1	¶3.10	2521
Ohio County—		
Vickers et al, T. Green 4	10	580
Pike County—		
Bent Mountain O&G Co., Varney Deskin 1	¶.10	3543
United Carbon Co., Republic Steel 798	¶.06	4153

*Failures; †Junked; ¶Million cu. ft. gas.

J. L. Kennard et al's Marble City 1, wildcat 2105 feet from the north line and 4620 feet from the east line, Section 10-Q-24, was drilling below 1500 feet after setting surface casing to 110 feet. T. J. Boyce's A. Walker 1, 3960 feet from the east line and 520 feet from the north line, Section 10-N-24, was shut down at 1120 feet. The wildcat is 2 miles north of Sebree.

Two other wildcats besides the Marble City test were among the week's new starts. In Daviess County, Porter Evans' S. R. Ewing 1, 5800 feet from the north line and 1700 feet from the west line, Section 5-P-29, set 10-inch to 115 feet and was drilling below 1400 feet, and in Ohio County, Frazier & Lilly's Davis 1, 3500 feet from the north line and 2150 feet from the west line, Section 3-K-33, set 8-inch to 737 feet, topped the Golconda at 1055 feet, and was drilling at 1100 feet.

South Penn Oil Company's E. R. McPherson 1, 450 feet from the west line and 140 feet from the south line, Section 13-H-32, Butler County, was plugged at 879 feet, and Hart & Hart's Mrs. May Haywood 1, 1200 feet from the north line and 950 feet from the west line, Section 4-Q-31, Daviess County, was abandoned at 1175 feet.

Indiana

Wildcat near Griffin pool swabs few gallons of oil

Evansville.—Superior Oil Company's Mumford Realty Corporation 1, wildcat in the NW SW NE 35-3s-4w, 2 miles south of Griffin pool of Gibson County but on a separate structure, swabbed only a few gallons of oil on drilling plug to the Aux Vases sand and was plugged back to the Cypress. The latter formation probably will be shot.

In the new gas field of Jefferson Township, Pike County, near the town of Iva, 5 new tests were drilling in the vicinity of Al Walker & Yandell Robers' Claude Colvin 1, the discovery. These operators were drilling the A. P. Hancock 1, SE NE NW 6-8n-9w, at 600 feet; the Fred Garrison 1, NW NE NE 30-1n-6w, at 350 feet; the Cyrus Colvin 1, NE SE NW 30-1n-6w, at 300 feet; the Edna Johnson 1, NW SE SE 19-1n-6w, at 200 feet, and were spudding the P. Denham 1, S½ NW NE 30-1n-6w. The discovery encountered gas at about 760 feet. Newton Pipe Line Company has started preliminary work for a pipe line to the field.

W. O. Allen, Jr.'s Electric Shovel Coal Company 1, wildcat 200 feet from the south line and 1155 feet from the east line, SE 28-2s-7w, topped the McClosky at 1492 feet, found it dry, and plugged at 1566 feet. Surface elevation was 547 feet.

Five wildcats, scattered in as many counties were among the week's first reports. In Gibson County, W. F. Lacy's P. Julian 1, C NE NW SE 26-3s-14w, was preparing to deepen from 2525 feet; in Knox County, Wiggins et al's State Life Insurance Company 1, SW SW NW 14-1s-12w, was moving in rotary; in Perry County, H. J. Baker's Peters 1, 50 feet from the east line and 100 feet from the south line, NW NW 11-5s-3w, was drilling at 210 feet; in Posey County, Sun Oil Company's Julia Gottman 1, NW SW SE 35-6s-12w, was rigging up rotary, and in Spencer County, Sycamore Oil Company's Prudential Life Insurance Company 1, 76 feet from the north line and 200 feet from the west line, SW NW 6-7s-7w, was rigging up machine.

Indiana Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Daviess County—		
Norris et al, Daviess County Land Co. 1, nw ne ne 17-2n-5w	¶	320
Gibson County—		
Continental, Keck 1, se se se 27-3s-14w	500	2520
Lewis Production Co., Cooper D-5, ne ne nw 13-3s-14w	150	2129
Cooper C-3, nw se nw 24-3s-14w	130	2524
Hollandsworth & Bander, Cooper 23, se nw ne 24-3s-14w	120	2519
Huntington County—		
R. L. Meyers, Cramer 1, c sw nw 29-2n-9e	*	1120
Posey County —		
Roberts Bros., Keck 1, nw ne nw 34-3s-14w	350	2799
Keck 2, ne nw nw 34-3s-14w	*	2916
Superior Oil Co., New Harmony 10, sw se sw 10-5s-14w	75	2211
Spencer County —		
Damron Bros., Howard 1, sw se se 35-7s-7w	15	1537
Vanderburg County—		
K. R. Bixby, Glaser 4, sw sw nw 31-5s-11w	40	1222

*Failures; †Junked; ¶Million cu. ft. gas.

Appalachian

Northeastern Ohio gets unprecedented lease play

Jefferson, Ohio.—Extreme northeastern Ohio, particularly Ashtabula and Trumbull counties, is enjoying a leasing play unprecedented for any area east of Indiana in recent years.

Magnolia Petroleum Company and Sun Oil Company are principal major

Ohio Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Ashland County—		
Roy Stewart, Stewart 2	5	777
Athens County—		
Ohio Fuel Gas Co., Mansfield 2	¶.11	1608
Nuzum et al, Warren 2	*	298
Columbiana County—		
Natural Gas Co., Rowley 779	*	1000
Cuyahoga County—		
Benedum-Trees, Ward 1	¶3.20	2866
Guernsey County—		
Purdy Co., Morgan 1	¶.15	967
Jewell Gas Co., Wayble 1	*	1287
Hocking County—		
Kackelmacker Estate, Dougherty 1	5	2682
Joe Reuben et al, Wood 1	*	3033
Knox County—		
Knox Exploration Co., Porter 1	¶.38	2982
Lake County—		
Cushing & Dempsey, Monch 1	*	3246
Lawrence County—		
Ray Gas Co., North Kenova 3	¶.10	2505
Licking County—		
Rex Roth Oil Co., Walpole 3	5	771
Wiley et al, Hirst 2	¶1.20	2624
Bebout & Sons, Wahl 2	¶.30	2627
Moore & Murphy, Swisher 1	¶.25	2612
Ohio Fuel Gas Co., Hughes 1	¶.19	2637
Hazlett et al, Glaub 1	*	2716
Medina County—		
Marine Trust Co., Ross 024	25	479
Ross 033	I	380
Ripley 029	I	569
Ripley 028	I	572
Preston Oil Co., Tract 16-7	6	311
Pearsall et al, Vandermark 1	2	424
East Ohio Gas Co., Jackson 1	*	2595
Meigs County—		
Bengle & Downie, Renter 1	3	398
Monroe County—		
C. E. Peters, Fee 2	¶.05	2009
Putnam County—		
Dibble Oil & Gas Co., Harmon 1	5	1370

"I" indicates intake well.

*Failures; †Junked; ¶Million cu. ft. gas.

companies taking part in the activity, and their work is being supplemented by several independent operators. Over 10,000 acres are reported already filed in Ashtabula County.

Pennsylvania Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Bradford (water intake wells)		
First Nat'l Bank, Port Allegany Fee	...	....
Smith Newton, Lincoln	...	....
Forest Oil Corp.	...	....
Forest Petroleum Corp., 2 wells	...	....
Niagara Oil Corp., 5 wells	...	....
Bradford District (Regular Completions)		
Tapp, Gallets & Buffington, Trs., Fee	5	....
Ryder Scott Co., Fee	2	....
Messer Oil Corp., Redfield	3	....
D. W. Daly No. 2, Bing 369	2	....
H. M. Jack et al, Jack	2	....
T. H. Givan, Bing 317-21-2-7	1	....
Bradford Transit Co., 11 wells	11	....
Forest Oil Corp., 3 wells	3	....
Forest Petroleum Corp., 2 wells	2	....
Niagara Oil Corp., 4 wells	4	....
Butler-Armstrong District		
E. H. Hutchinson, E. H. Hutchinson	2	....
Middle District		
Harry A. Allaman, Harry A. Allaman	1	....
S. H. Elder & Co., Elder	1	....

New York Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Allegany County—		
MacDonnell Oil Co., MacDonnell farm, Bolivar	10	1290
Ebenezer Oil Co., Mecklin farm, Scio	8	1088
Mecklin farm, Scio	7	1079
Central Oil Co., Holtum farm, Scio	6	1154
Robinson & Cole et al, Robinson farm, Scio	3	1125
Wm. Taylor Est., Breckenridge farm, Alma	7	1370
Breckenridge farm, Alma	6	1363
Porge Oil Co., Anderson farm, Alma	10	1065
Bradley Prod. Corp., Monitor farm, Alma	6	1390
Monitor farm, Alma	8	1382
Monitor farm, Alma	10	1410
Allegany: Water Intake Wells		
Lester Young, Myrtie Vincent farm, Scio	...	1040
Robinson & Cole, Robinson farm, Scio	...	1230
C. H. Christman & Son, Underwood farm, Scio	...	1290
Porge Oil Co., Anderson farm, Alma	...	1075
Bradley Prod. Corp., Monitor farm, Alma	...	1360
Monitor farm, Alma	...	1368
Monitor farm, Alma	...	1374
Hardy & McBride, Garthwaite farm, Alma	...	1345
Forest Oil Co., Ackerman Farm, Bolivar	...	1364

West Virginia Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Clay County—		
Pittsburgh & W. Va. Gas, Huling 7703	¶4.02	1460
Doddridge County—		
Pittsburgh & W. Va. Gas, Maxwell 4658	¶.07	2167
Gilmer County—		
Rock Creek Oil Co., Miller 1	¶.03	1935
Pittsburgh & W. Va. Gas, Peters 7638	*	2765
Kanawha County—		
South Penn Oil Co., Monk 1	¶13.00	5004
Columbian Carbon Co., Tignor & Griffith 1	¶.44	5154
Lincoln County—		
Federal Gas Co., Tudor 1	¶.26	3685
Marshall County—		
Clara Moore, Arrick 3	3	1695
Pleasants County—		
Snider & Nohe, Hammett 1	2	2030
Adelia Oil Co., Simonton 4	¶.15	2073
G. A. Smith & Co., Lamp 1	¶.05	1967
Ritchie County—		
Patterson & Pope, Patterson 10	1	1897
Reno Oil Co., Coyle 4	¶.35	1928
Roane County—		
Boggess & Dodd, Mullins 1	*	1520
Tyler County—		
T. King et al, Ash 2	1	1761
Upshur County—		
Cumberland & Allegheny Gas Co., Coldridge 293	¶.15	4400
Wayne County—		
Southern W. Va. Gas Co., Pritchard 24	¶.15	3371
Wood County—		
Athey et al, Ogden 14	*	875

*Failures; †Junked; ¶Million cu. ft. gas.

Oklahoma

Pottawatomie County test makes over 250 barrels

Tulsa.—Russell B. Patterson's Mann 1, SW NE SW 19-6n-5e, wildcat north of Gray pool and in Pottawatomie County, indicated a producing capacity in excess of 250 barrels per day from Senora sand at 2823-99 feet, but has been plugged back to 2865 feet, where the formation will be shot. While the new area has not been given a name, Gulf Oil Corporation is taking the output.

Pumping 60 barrels of 26.5-gravity crude per day, Alma Oil Company officially opened a new oil pool and first for Chickasha gas area, Grady County. Pettitt 5, SEc 11-4n-8w, southern portion of the pool, had sand pay perforated from 3249-64 feet. The well was being tested and on the second 24-hour run, made 54 barrels. Pettitt 6, a west offset to this producer, was immediately staked in SW SE SE 11-4n-8w.

Wildcat Shows Again

Another fair showing of oil was cored at McGraw Oil Company and Johnson-Kemmitz Drilling Company's wildcat test in Marshall County. Godfrey-Neff 1, SW SE NE 14-6s-6e, 4 miles southeast of Madill pool, had a full recovery of saturated sand with bubbling gas from 3832 feet to 3844 feet with a show of dead oil. A core from 3850 feet to 3865 feet carried only spotted saturation, but a drill-stem test will be made.

A small spot opener was indicated for Osage County as Norbla Drilling Company had a possible producer on Carter Oil Company acreage at Osage 1, NWc 9-24n-6e, 2 miles east of Fairfax. Mississippi lime was penetrated from 2844 to 2895 feet and plugged back to 2853 feet. Lime was shot with 10 quarts, after which 18 barrels of oil was swabbed in 24 hours.

Deep One Plugged Back

Continental Oil Company abandoned hopes of making a world's depth record at Proctor 1, C NW 28-10n-20w, 7 miles south of Elk City, plugging back to 13,580 feet from 14,582 feet, where stuck drill pipe could not be removed. Several gas shows up the hole will be tested by perforations. Pontotoc series was topped at 4460 feet and Pennsylvanian at 6577 feet, in which formation drilling ceased. A record string of 9⅝-inch casing was cemented at 10,172 feet, and 4779 feet of 7-inch liner was set at 14,491 feet. The best show of gas was believed around 10,750 feet.

S. D. Butcher's Hunton lime discovery in Pottawatomie County proved small in area as an offset test showed salt water. Deep Rock Oil Corporation's Mickish 1, NWc SW 36-10n-4e, had water in basal Hunton lime at 4289 feet but drilled to 4292 feet for a small show of oil.

Patsy Oil & Gas Company will drill Garrett 1, a wildcat in NW NE NE 16-5n-3e, southwest of Asher pool in McClain County. In this section Homa-Okla Oil completed Newsome 1, SE NE NE 16-5n-3e, in Viola lime at 3584-3601 feet for 18 barrels. Pay was never acidized.

In Hobart pool, Kiowa County, Phillips Petroleum Company's Warner 1, NEc SE 19-7n-17w, a southwest offset to the discovery well, was making over 5 million cubic feet of gas and from 4 to 5 barrels of oil from lime at 1035 feet. Pipe is set at 1025 feet.

Extension Looms

The south flank of Ponca City pool, Kay County, may receive an extension. Continental Oil Company's Goodboy 1, C SE NW 18-25n-2e, shot pay with 20 quarts from 3901 to 3911 feet and was cleaning out with 2100 feet of oil standing in the hole.

W. R. Ramsey et al's Mansfield 1, C NW NE 16-14n-9w, near Calumet, Canadian County, drilled to 9571 feet in lime, and sidewall cores were being taken after running an electric log.

Oklahoma Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Caddo—		
Ohio, Pau-Kune 10, ne ne se sw 3-5n-9w	3361	3478
Carter—		
Johnson, Davis 22, se ne c sw 6-4s-3w	22	1150
Comanche—		
Evans, Maloney 1, nec se 23-2n-11w	*	250
Garvin, Fee 1, sw sw se sw 25-2n-11w	3	245
Fee 2, sw se sw 25-2n-11w	¶0.1	244
Fee 3, se nw sw 25-2n-11w	*	241
Cotton—		
Kelly, School Land 1, ne ne nw ne 35-2n-11w	*	223
Creek—		
Viersen, Judeman 1, sw se nw 24-14n-10e	*	3184
Tilley, Wright 1-A, nw se se 17-17n-8e	15	2376
Schamblin, Gibson 1, ne sw sw 18-17n-11e	¶3.5	2282
Strozier, Abbot 1, sec nw 36-17n-11e	*	2660
Greer—		
Butler et al, Myers-Buell 1, ne ne se nw 25-7n-21w	*	1228
Jackson—		
Gulf, Inkelbarger 1, swc 3-1n-20w	*	2136
Burnham, Abernathy 1, swc ne 11-1n-20w	*	1696
Kay—		
Burke, Shive 1, c ne nw 4-27n-3e	*	1364
Shell, Priboth 4-W, ne se nw 21-29n-1w (otd 3360 ft)	*	3533
Lincoln—		
Yorkan, Tipkin 1, c nw sw 15-13n-6e	¶11.3	4154
Muskogee—		
Ables, Nickols 2-A, sw sw ne se 28-15n-16e	*	804
Okfuskee—		
Hyer et al, Board 1, se sw nw 10-13n-10e (otd 2685 ft)	*	3416
Oklahoma—		
Hall-Briscoe, Thompson 1, swc ne 28-13n-1e	100	4855
Osage—		
Midco, 3, swc 12-22n-11e	*	1825
Pawnee—		
Kelley, Hill 1, swc se 1-21n-5e	*	3370
Magnolia, Miller 11, c nw nw 4-22n-3e	¶0.4	2246
Pottawatomie—		
Skelly, Decker 1, nwc sw 16-7n-4e (otd 4126 ft)	50	3579
Kerlyn, Ogee 1, ne nw ne 17-7n-5e	577	2864
Magnolia, Tull Fyke "C" 4, 100 ft s ne se se 20-7n-5e	110	2831
Watchorn, Coleman 2, nw ne nw 33-7n-5e	20	4223
Seminole—		
Wood et al, Ashby 1, sw ne nw 22-7n-5e	3	4283
Tulsa—		
Wilson, Phillips 1, ne nw se 16-19n-11e	*	2138

*Failures; †Junked; ¶Million cu. ft. gas.

Kansas

Eighteen pools extended or joined during week

Wichita.—With a continual linking of major oil pools in Kansas it is increasingly evident that inter-connected oil reserves underlie the pronounced central Kansas uplift, although the accumulation tends to follow successive geologic "highs." Over 18 pools were either extended or joined during the past week with one being designated as a new pool.

A quarter-mile north of Balta pool and ½ mile south of Balta North pool, Russell County, Johnson's Brown 1, SE NE NE 31-13-14w, was completed for a pumping potential of 105 barrels of oil and the same quantity of water in 24 hours following acid. Arbuckle lime was had from 3311 feet to 3323 feet. This producer will likely join the 2 producing areas.

Six other pools in Russell County were extended. Skelly Oil Company's Anderson 1, C S½ SW NW 8-15n-13w, ½ mile north of Coralena, had a hole full of oil in 7 hours and flowed 21 barrels in 1½ hours from 3004 feet, Lansing-Kansas City lime. Lime was topped at 2955 feet. This well was originally drilled to 3250 feet in Arbuckle lime but sulphur water was encountered at which it was plugged back to 3160 feet. South Gurney was extended ¼ mile west when Braden & McClure's Herbel 1, NE NW NW 35-14-14w, made 2222 barrels daily from Gorham sand at 3185 feet. Coralena Oil Company's Dumler 3, C N½ NW 36-15-14w, between Trapp and West Trapp, was completed for 2179 barrels natural from Arbuckle lime at 3315-21 feet.

The largest producer in Trapp pool was completed by Coralena Oil Company. Cora 1, SW SE NE 29-15-13w, an old well originally completed for 70 barrels, was acidized with 2500 gallons in Arbuckle lime, topped at 3334 feet and drilled to 3338 feet. A physical potential of 7091 barrels was established.

East of south end of Trapp pool, ½ mile, Shell Oil Company's Sellens 1, SWc 33-15-13w, following acid, swabbed 180 barrels in 5 hours from Arbuckle lime at 3321-30 feet. Crude then stood 700 feet off bottom.

Barton County Extensions

Barton County contributed its share of extensions. J. A. Aylward's Wendland 2-A, SE NE 4-17-11w, ¼ mile south of Kraft, made 498 barrels of oil daily from Arbuckle lime at 3361 feet. Alpine Oil & Royalty Company's Duncan 1, C S½ SE NW 8-20-11w, ½ mile west of Ellinwood, had saturation in the cuttings from Arbuckle lime at 3298 to 3300 feet. Five-inch casing was set at 3298 feet and standard tools were being rigged up for drilling in.

Kraft South, a new Barton County pool, increased its potential from 176 barrels daily to a depthograph potential of 8206 barrels, although pool maximum is 3000 barrels daily. After acidizing with 2000 gallons, in 6 hours it swabbed 180 barrels from Arbuckle lime topped at 3270 feet and drilled to 3296 feet. Kraft South pool lies ⅞ mile southwest of Kraft pool.

New Pool Opened

Coal Creek was a new pool for Kansas. It was opened at R. E. Day and others' Feltes 1, SEc NE 14-16-12w, lying west of West Prusa pool. Operators were testing and preparing to take official potential from 3344 feet in Arbuckle lime with the hole standing full of oil.

South of Prusa, B. B. & M. Drilling Company's Krier 1, C E½ SE SE 30-16-11w, made a depthograph potential of 360 barrels of oil, gravity 42.5, but was estimated good for 700 barrels.

Ten miles northwest of nearest gas production, E. W. Mosbacket et al's McLaughlin 1, SW NE NW 4-10-20e, in Jefferson County and on the southwest flank of Forest City Basin, tested 6,000,000 cubic feet of gas from Bartlesville sand topped at 1426-59 feet. The hole was loaded with water when drilled from 1430½ feet to the total depth as gas pressure was high. Eight-inch casing will be cemented before deepening.

Barnholdt pool, McPherson County, was the most active in the county. Larger wells are being completed as the area is extended. Continental Oil Company completed the largest pro-

Kansas Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Barton—		
Sinclair Prairie et al, Seyfert 5, nwc sw 21-16-11w	2654	3327
Seaney et al, Schauf 1, c s½ se sw 1-16-12w	*	3393
Transwestern et al, Pospishel "A" 1, c w½ nw sw 21-17-15w	291	3590
Claude et al, Petz 1, c w½ sw sw 14-19-11w	*	3471
Stanolind, Stueckemann 1, cwl nw se se 11-20-11w	1551	3287
Crown, Schartz 1, sec nw 12-20-12w	126	3363
Butler—		
Rex-Morris et al, Johnson 3, ne se se 20-26-7e	30	2189
Marylyn, Howard Ranch 1, sw ne ne 28-29-8e	*	2889
Cowley—		
Smith et al, Kingsbury "B" 1, 30 ft w sw se sw 4-33-6e	526	3517
Ellis—		
Hollow et al, Cress 2, se nw sw 13-11-17w	2530	3372
Dickey, Carmichael 5, c n½ se nw 18-11-17w	32,640	3364
Cities Service, Colahan 4, nw sw nw 24-11-17w	31,532	3420
Darby, Peavey "A" 2, c n½ se sw 13-11-18w	34,779	3434
Ellsworth—		
Continental, Rolfs 8, csl sw nw nw 34-17-8w	9190	3228
Greenwood—		
Shull et al, Long 4, sw ne sw ne 17-23-13e	21	1745
Johnson—		
O. K. Supply, Gardner 1, sec ne 4-14-22e	¶0.18	621
Cameron et al, Knabe 1, ne nw sw 29-14-22e	*	814
Kingman—		
Skelly, Conley 3, cwl sw ne sw 20-27-10w	201	3430
Marion—		
Harwood, Novak 4, sw se nw 28-17-4e	300	2426
H. & M. Sellers 5, cwl nw ne nw 31-19-1w	137	2980
McPherson—		
Bennett, Knackstedt 1, c s½ sw sw 30-20-5w	454	3369
Pratt—		
Springrose, Sitton 1, c ne nw 35-27-11w	¶58	4118
Rice—		
Continental, Nickel 8, nw se sw 13-18-8w	3949	3222
Jones, Benhke 1, c w½ sw nw 25-18-10w	805	3209
Schneider et al, DeWeese 1, swc ne 31-20-7w	45	3316
Myers et al, Linville 1, swc se 4-20-10w	160	3185
Gulf, Weber 1, c w½ nw sw 19-20-10w	812	3287
Douglas et al, Hauschild 6, c s½ se nw 15-21-7w	898	3408
Wolf Creek, Bauer 2, c e½ nw sw 23-21-7w	922	3395
Schnyder et al, Partington 2, ne sw sw 22-21-9w	¶12	3328
Rooks—		
Plainstock, Westhusin 2, c w½ se se 11-9-17w	414	3258
Russell—		
Cities Service, Carter 3, c s½ sw ne 29-14-13w	863	2993
Witt, Witt "B" 1, se sw sw 10-14-15w	168	3239
Stafford—		
Stanolind, Fuller 7, c e½ sw sw 11-24-11w	802	3782

*Failures; †Junked; ¶Million cu. ft. gas.

Forest City Basin

State has watchful eye on flow of Nebraska discovery

Falls City, Neb.—Pumping equipment was installed November 20 at Nebraska's discovery well, Pawnee Royalty Company's Boice 1, CSL N½ NE NE 18-1n-16e, west of Falls City. On that day it pumped 60 barrels of oil in 6 hours. The following day 68 barrels was made in 6¾ hours.

Southwest of this well the operators were spudding Myers 1, C NW NW 24-1n-15e. A third test is being planned 60 days after the Myers test is completed in 7-1n-16e.

California-Nebraska Oil Limited's Stuehm 1, NWc 21-14n-37w, Keith County, was drilling below 3180 feet. A show of oil was reported at 2895-2901 feet and a show of gas at 2980 feet.

Golden Rod Oil Company's Sporrer 1, SEc 8-11n-13e, had a rainbow show of oil at 420 feet and was drilling below 1235 feet in Viola lime. Dan Kornfield was drilling below 1000 feet at Mathies 1, NEc 22-5n-1w.

Boice 1 is pumping under the watchful eye of Nebraska inspectors. A bonus of $15,000 will be paid if the well pumps 50 barrels a day for 60 days.

Governor R. L. Cochran assigned the supervision to John Ainlay, director of the state motor fuel inspection division. Ainlay appointed James Knajdl of Brainard and W. J. Wenzl of Dawson to do the actual inspecting, the expenses of all three to be borne by Pawne Royalty Company. Ainlay will visit once a week and the inspectors will be on duty whenever the pump is operating, dividing night and day time.

Missouri has 8 basin tests drilling at this time and two on which rigs are standing after lengthy shutdowns. One new test will begin in about a week and several others are shaping up. During the past week there were two dry holes.

Iowa has one deep test and soon will have another, Phillips Petroleum Company being about ready to spud Creston 1, 10 miles south of Creston, Union County.

First Forest City basin oil brought 94 cents a barrel and tested 31.4-gravity at the H. A. Searle refinery at Omaha. A temporary arrangement has been made with the refinery. Oil is being hauled by truck. The Burlington railroad has made a survey for a siding and is expected to lay track shortly.

ducer to date when Johnson 1, NEc 31-20-5w, made 3003 barrels in 24 hours from 3377 feet, Chat or Upper Mississippi lime. One location east of production Fain Drilling Company and Sunray Oil Company had a hole full of oil at Briggs 1, C W½ SW NW 29-20-5w. The well flowed for 2 hours from Chat at 3338-60 feet.

Two Ellis County pools were extended and one was defined. Dickey Oil Company's Kollman 1, C N½ SW NE 18-11-17w, ¼ mile east of Burnett South, filled 2000 feet with oil in 1 hour from Arbuckle lime at 3360-63 feet. Burnett and Burnett South pools may be linked by a producer ½ mile north of Burnett South and 1 mile south of Burnett Arbuckle lime pool as Earl Wakefield's Burnett "A" 1, SW SE SE 1-11-18w, filled 2000 feet with oil in 45 minutes. Arbuckle lime was penetrated from 3461 to 3463 feet.

An east offset to the Koblitz discovery well, Doley Oil Company's Stackhouse 1, SW SE NW 23-12-18w, was abandoned at 3775 feet in Arbuckle lime topped at 3723 feet.

Silica and Wenke pools, Rice County, may be joined. W. N. Bartlett's Houston 1, NWc 19-20-10w, ½ mile east of the northeast corner of Silica, had saturated Arbuckle lime from 3259 feet to 3264 feet. Seven-inch casing was cemented at 3258 feet prior to drilling in with standard tools.

Southwest of Lyons gas pool, ½ mile, Derby Oil Company and others' Williams 1, C NW NE 14-20-8w, topped Simpson sand at 3274 feet and a core from 3275 to 3280 feet gave a show of oil and gas. Five-inch casing was set at 3275 feet and standard tools will drill in at 3280 feet.

One-half mile north of Stoltenberg pool, Ellsworth County, Duwe and Farris' Boye 1, C W½ SW SW 9-16-10w, had saturation in cutting from Arbuckle lime at 3365-71 feet. Casing was run to test the show.

One mile northeast of Wilson pool, Cowley County, E. B. Shawver et al's Henderson 1, C W½ NE NE 4-33-6e, made 5 barrels of oil and a third barrel of water per day from Arbuckle lime at 3599-3613 feet.

Morton's Cannon 1, NEc NW 15-28-7e, ½ mile northwest of Brandt pool, Butler County, which was earlier estimated at 100 barrels, pumped only 30 barrels in 24 hours from Mississippi lime at 2740-64 feet.

C. W. Trickett's Daugherty 1, C W½ NW NE 13-9-17w, ½ mile southeast of Westhusin pool, Rooks County, pumped 12 barrels of oil an hour for 16 hours. Pay is Lansing-Kansas City lime at 3142-3252 feet.

Mississippi

Fourth oil producer, first failure at Yazoo City

Jackson, Miss.—The Tinsley Dome field, Yazoo County, added its fourth oil well last week and also chalked up its first failure, which defined the limits of the producing area to the west.

Jones & O'Brien's Stevens 2, C SE NE 13-10n-3w, completed after casing was perforated from 4545 to 4585 feet with 240 shots, flowing 55 barrels of oil the first hour through 22/64-inch choke, later settling to about 30 barrels hourly. Elevation is 242 feet.

Union Producing Company's Friley 1, ½ mile west of the discovery well, NE SE 14-10n-3w, was abandoned at 5029 feet after missing production in both the Selma and Eutaw horizons. After coring from 4880 to 4901 feet recovering green and gray spotted saturated glauconitic sand, drill-stem test made to that depth recovered 70 feet of drilling mud slightly cut with oil. The formation was identified as the Eutaw. Elevation was 226 feet.

Union Producing Company's Stevens 1, C NW NW 13-10n-3w, ½ mile north of the company's Woodruff 1 (discovery), which drilled to 6112 feet and plugged back with seven-inch casing set at 4963 feet, prepared to perforate and test the Eutaw (Blossom) formation in which 23 feet of saturation that showed for an oil well in a drill-stem test was logged. The well missed the Selma horizon and after logging an oil showing in the Tuscaloosa (Woodbine) later showed salt water in the latter horizon. Elevation is 225.9 feet.

Mississippi Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Yazoo County (Tinsley Dome)—		
Jones & O'Brien, Jennie Stevens 2, 13-10n-3w	750	5074
Union Producing Co., Friley 1, 14-10n-3w	*	5029

*Failures; †Junked; ¶Million cu. ft. gas.

West Texas

Todd ranch Ordovician attempt is failure

San Angelo, Texas.—The third Ordovician test on the Todd ranch prospect in Crockett County proved dry when swabbed down through tubing after logging 216 feet of Simpson and taking in 60 feet of the Ellenberger lime section. A sharp rise in the structure encountered by Continental Oil Company and unit members' J. S. Todd 1, C S½ NE SW GC&SF Section 30, Block WX, afforded an abundance of geology, but lacked the porosity and saturation necessary to give West Texas its fourth Ordovician producing area. It was drilled to 6316 feet, having logged top of Simpson at 6040 feet, and first Ellenberger at 6256 feet, with an elevation of 2507 feet. Tubing was landed 31 feet off bottom for the swabbing test, which yielded small amount of gas, no free oil and some brackish water. Analysis of the fluid indicated that it was not formation water, but possibly rotary returns. Open hole prevails below the 9⅝-inch casing seat at 5700 feet. The test was awaiting orders late last week. It may be acidized before deepening.

Correlates High

This Crockett County deep test correlates 813 feet higher on the Simpson and 838 feet higher on the Ellenberger marker than Stanolind Oil & Gas Company and unit members' Todd 1, an 8041-foot failure completed in 1933. The latter is 1½ miles northeast of the new project, and carried promising oil and gas shows in the Simpson and Ellenberger. Superior Oil Company and unit members' Todd 1, C SE NE GC&SF Section 55, Block UV, abandoned in August, 1937, at 7948 feet, was off structure, having topped Simpson and Ellenberger at 7131 feet and 7424 feet, respectively, with an elevation of 2537 feet.

Plugging orders have been issued for Gulf Oil Corporation's Swenson 1-C, southeastern Crosby County wildcat, after developing sulphur water in the Ellenberger at 8307-8414 feet, with an elevation of 2475 feet. It is 10 miles northwest of a deep test drilled last year by the company which resulted in a small pumper in the Pennsylvanian after plugging back from granite at 8104 feet after finding water in the Ellenberger.

Holt Completion Assured

The completion of a third lower Permian producer on the west edge of the North Cowden field, Ector County, was assured when Sinclair Prairie Oil Company's Fay Holt 3, SWc SE PSL Section 1, Block A, filled 2000 feet with 38-gravity oil after drilling pay section at 5145-60 feet with tools. It has an elevation of 3089 feet, and is an east offset to the first completion in this

West Texas Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Andrews County (Emma)—		
Sinclair Prairie, Cowden 8	1119	4300
Brewster County (Wildcat)—		
Wilcox et al, Kokernot 2	*	1610
Crane County (Gulf-Waddell)—		
Magnolia, Edwards 13	40	3552
Crosby County (Wildcat)—		
Gulf, Swenson 1-C	*	8414
Ector County (Foster)—		
Atlantic, Henderson 3	1196	4200
Hilton Oils, Inc., Witcher-ITIO 5	1916	4180
Ector County (Goldsmith)—		
Gulf, Goldsmith 230	696	4215
Goldsmith 231	1492	4187
Trinity Drl. Co., Scharbauer-Humble 1	1147	4200
Ector County (Jordan)—		
Shell, University 7-D	1492	3654
Ector County (North Cowden)—		
Landreth Prod. Corp., Holt 4-A	836	4333
Phillips, Midland Nat'l Bank 1	1340	4392
Sun, Holt 1-D	650	4525
Gaines County (Wasson)—		
Amon Carter et al, Moore 5-45	544	5024
Carter & Phillips Pet. Co., Wasson 2-B	1496	5020
Jones County—		
S. B. Roberts Co. et al, G. I. Jeffreys 1	†	1505
Pecos County (Pecos Valley)—		
Black-Adams & Bennett, Iowa Realty-Redman 3	288	1646
Pecos County (Apco)—		
Magnolia, J. S. Masterson 1	179	4536
Upton County (Gulf-McElroy)—		
Gulf, J. T. McElroy 205	2417	2898
Ward County—		
W. A. Black & Sons, Texas Cotton Ind. 2	334	1911
Gulf, O'Brien 116	232	2767
Winkler County (Keystone)—		
Harding & Morgan, Jenkins-Gulf 3	245	3435
Yoakum County (Wasson)—		
Aloco Oil Co., Greer-Texaco 2	1070	5214
M. Jordan-Saltmount 3	497	5198
A. Miller-Texaco 3-A	443	5145
Continental, Stevens 4	679	5110
Denver Prod. & Ref. Co., Whittenburg 8-A	1452	5121
Magnolia, Kendrick 4-867	1368	5112
R. M. Kendrick 9	1583	5150
J. W. Murchison-L. Fikes, Elliott-Standard 12-B	410	5070
Shell, Baumgart 2-B	839	5188
F. W. Hensley 2	679	5250

*Failures; †Junked; ¶Million cu. ft. gas.

new pay for the county. Holt 3, 1 foot higher structurally on top of pay, was to be acidized late last week.

Identified as the lower middle Permian, this Holt zone may produce in other nearby fields in Ector and Andrews counties. A large producer would stimulate explorations. Stripper wells in the regular Permian zone that used 7-inch pipe for the oil string can be deepened, as proved by the first 2 deep strikes. Drilling of a deep test in Goldsmith field by one of the largest lease owners is tentatively scheduled.

More extensions are to be sought for the east side of the North Cowden field, which has been on production for 9 years. Arrow Drilling Company is negotiating for the purchase of the SW T&P Section 45, Block 42, and 40 acres adjoining on the west for an oil payment of $200 per acre and a test well. Stanolind Oil & Gas Company, successor to the discovery company, paid $50 per acre cash and $150 per acre out of oil for lease on NW Section 46, and a 40-acre tract that adjoins on the west. The latter also acquired 200 acres immediately south for a bonus of $250 per acre, half cash. Tide Water Associated Oil Company anticipates production extensions to the southeast, having recently paid $37.50 per acre cash and $145 per acre out of oil for a lease on SE Section 11, Block 43, and W½ NW and SW Section 19, Block 42, to the Texas Pacific Land Trust, which retains 1/6 royalty. An abandoned producer is on the former tract.

Wildcat Plugs Back

Magnolia Petroleum Company's Geo. Sealy 2-43, north Ward County wildcat, plugged back from chalky-lime at 3018 feet to 2931 feet, or 25 feet above the 5½-inch liner seat, after an electrical log revealed best oil saturation at 2989-97 feet and 3001-07 feet. Cable tools will be used to drill out cement and test for oil production. The well proved capable of commercial oil with high gas yield when the liner was gun-perforated at 2940-53 feet. This zone was squeezed off with cement to explore the lower lime.

Continuous development obligation assumed by Anderson-Prichard Oil Corporation in acquiring a lease on 800 acres of proved and semi-proved acreage owned in fee by the Santa Fe Railroad, (identified on maps as W. N. Willard, trustee) between the Bennett and Wasson areas, Yoakum County, will speed up drilling in the district. The former, an Oklahoma City concern, will spud its first test prior to November 27, then observe a 20-acre spacing plan until the productive acreage is drilled. Adjoining lease owners will undoubtedly match this campaign. Acreage consists of SE and W½ Section 805, SW Section 759 and NW Section 761. Fee owner is to be carried for 1/6 over-riding royalty in addition to the usual 1/8 royalty interest. This deal had been pending for some months, and the terms are similar to acreage acquisitions by John Mabee et al. Denver Producing & Refining Company, owner of 3 proved sections in the Wasson area, that were obtained for an oil payment of $1250 per acre out of ¼ of the production, contracted to surrender lease on the undrilled 40-acre units at the end of 5 years. The latter has completed 22 of its scheduled 48 tests, and offset lease owners are matching this development.

Uniting of the Duggan and Slaughter fields, most northerly oil areas in West Texas, was accomplished by Atlantic Refining Company's H. T. Boyd-Humble 1, SWc Labor 11, League 56, Cochran County, with an initial flow of 884 barrels after using 7500 gallons of acid in saturated zone at 4950-5040 feet. Humble Oil & Refining Company farmed out the drilling site, embracing 7 labors, and reserved 1/16 over-riding royalty. Dean Bros., Ed Hyde et al's Reed 1, southern Cochran County wildcat, encountered sulphur water near the 5100-foot level and is to be abandoned.

Amerada Petroleum Corporation's Riley 1-A, offsetting production near the north end of the Seminole field, Gaines County, logged 285 feet of broken oil pay in drilling to 5348 feet. This well flowed 173 barrels natural through ½-inch choke in 6 hours, but dropped to 169 barrels in 6 hours through same size choke after using 2000 gallons of acid.

Texas Panhandle

Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Carson County—		
Cities Service, Burnett 33-A	¶6.6	2945
Magnolia, Fee (lse. 244) 63	197	3050
Fee (lse. 244) 64	390	3083
Gray County—		
King Oil Co., Castleberry 12	432	3282
Magnolia, C. S. Barrett 10	254	3276
J. J. Wall 3	362	3290
Stanolind, T. B. Cobb 5-A	386	3331
Tripplehorn et al, L. H. Webb 4	428	2595
Hutchinson County—		
Mid-States Oil Corp., Whittenburg 29-A	401	2923
Stanolind, H. B. Terry 18	167	2994
H. B. Terry 19	369	3010
Smith Bros. Ref. Co., Herring 6	20	3215
Moore County—		
Panhandle Eastern P. L. Co., Sneed 1-50	¶91.9	2775
Wheeler County—		
Christie-Hickman, Perkins 4	202	2487
El Bar Corp., Noel 13	224	2448

*Failures; †Junked; ¶Million cu. ft. gas.

North Texas

Oil from new depth indicated in Montague County wildcat

Wichita Falls.—A new producing depth for North Texas is indicated for the southwestern Montague County wildcat being drilled by Walter H. Gant and Continental Oil Company on the J. T. Brown 80-acre site, NW SW SE ETRy Section 58, 5½ miles northeast of Bowie, from the Lower Pennsylvanian. Oil and gas appeared with rotary returns after coring broken pay from 6428 feet to 6572 feet, requiring 12-pound mud to prevent the well from heading. It is due to be deepened to the Ellenberger before undertaking a production test. Originally scheduled as a 5000-foot test, this wildcat is carrying open hole below surface pipe. Owners are reluctant to make drill-stem test before going deeper because of the danger of freezing the stem. Production is believed to be in the Lower Bend Lime which was topped at 6112 feet.

Two tests in process of completion in the Strawn horizon on the west side of Nocona Townsite will give the area a total of 9 producers with 5 in the Lower Strawn. Rogers & Rogers' Ashley-Texaco 2, near west edge of the area, logged oil sand at 4653-67 feet and 4669-75 feet followed by shale and lime to 4694 feet. String of 5½-inch pipe was cemented at 4678 feet, and will be perforated. Sunray Oil Company et al's Burnett 1, south outpost, required light nitro shot at 4634-41 feet to develop a flow of 56 barrels in 6 hours through 1¼-inch choke after plugging back to 4647 feet from bottom-hole water at 4653 feet.

Another Simpson horizon producer for the Walnut Bend pool, Cooke County, was recorded when Cox & Hamon's Neu-Texaco 8-B, east side location, indicated a 250-barrel natural producer from comparatively thin pay. Top of Simpson was called at 5191 feet and hole was drilled to 5320 feet. Majority of Simpson tests have been failures and the original completion in this lower pay by Sinclair Prairie Oil Company failed to maintain its flow, resulting in the hole being plugged back to the regular Strawn. It recently developed water in the Strawn. A treating plant is being erected.

K-M-A is maintaining its long established position as the most active drilling center in the district through a pickup in development as result of the recent hike in proration allowable. Currently it has 47 operations listed including 20 wells in process of completion, and 18 drilling with rotary above the Strawn. The Hull-Silk deep area, Archer County, is the nearest rival with 40 operations. The latter has 21 wells drilling and testing. The southwest sector of K-M-A is showing a revival of activity with Magnolia Petroleum Company and The Texas Company starting development on their Thom leases to take care of offsets.

Expansion of the Consolidated pool, southeastern Wilbarger County Strawn area, one mile to the west was promised by Consolidated Oil Company et al's Waggoner 1-FF, near SW SW NE H&TC Section 25. Casing has been set to test saturation near the 4020-50-foot level. The partnership is starting Waggoner 1-GG NE SE SE H&TC Section 7, Block 17, another outpost on this trend.

Third flowing producer from the Caddo lime in the Mankins deep pool, Archer County, was developed by British-American Oil Producing Company's Hunter-Eddleman 1, west offset to its discovery. The well flowed 20 barrels of oil hourly after using 5000 gallons of acid in saturation at 4685-4705 feet, having plugged back from 4786 feet. Edwin B. Hopkins et al, only outside participants in this deep development, were due to reach the Caddo late last week on their north offset to the above producer.

W. B. Hamilton et al's C. E. Graham 5, southwestern Archer County, encountered hole full of water in the Lower Pennsylvanian series at 5276-79

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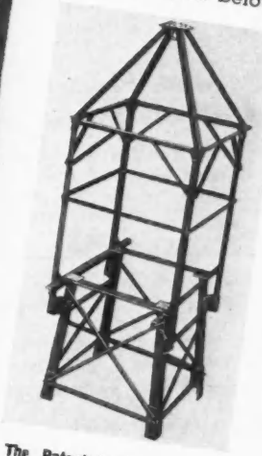

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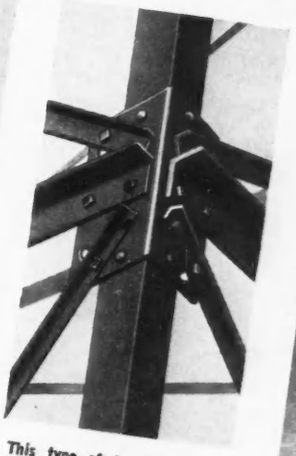

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feet, with 7-inch cemented at 5205 feet. Hole has been plugged back to perforate casing and acidize saturation logged in Caddo at 4764-77 feet. Perkins & Cullum's Falls County 183, Block 21, Falls County School Lands, is fishing for short section of drill pipe lost after drilling at 5065 feet, corrected depth. This deep prospect logged top of Caddo at 4688 feet, and also carried saturation in the upper portion.

A shallow oil strike for northeastern Wichita County is being completed as a pumper by Underwood Oil Company's W. P. Rogers 1, located 1600 feet from north and 2300 feet from west lines of 250-acre tract, George Wheelwright Survey, A-320, near the Clay County line. It is rated at 25 barrels initial from sand at 1200-06 feet.

North Texas Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Archer County (Hull-Silk)—		
Ligon et al, Little 1-A, sec 2	680	4363
L. T. Burns-Helmerich & Payne, Wilmot 1	1200	4396
Archer County (K-M-A)—		
Staley Oil Co., Mangold 17, blk 31	744	3810
Archer County—		
Barnes & Traugh, Carson 1-A, sec 1	104	1310
Fagadau et al, S. B. Herron 1, sec 12	*	870
Hamilton Pet. Co., Green 1-B	112	1153
Green 2-B	20	1134
Kimmell & Woofter, Williams 14	14	571
King Oil Co., Rogers 7, sec 1600	10	1276
Phillips, Moss 4, sec 1	*	1312
Archer County (Wildcats)—		
Shappell Oil Co., C. E. Carter 4, sec 37	*	915
Shell, E. Colgan 1	133	1463
Baylor County (Seymour)—		
British-American, Green 2-D, sec 215	198	2592
Green 3-D, sec 215	*	2639
Clay County (Wildcat)—		
Hughes & Gerard, Ramsey-Slayback 1, blk 31	*	202
Cooke County—		
King Oil Co., Jos. Wiesman 1	6	739
McDaniel & Beecherl, Wiesman 4	83	727
A. D. Robinson et al, Otto 14-B	15	850
Russell & Harwell, J. Lynn-TCU 2	158	1145
Staniforth et al, Voth 6	327	1729
Trumter Oil Co., J. J. Eberhart 1	*	1282
Whitfield-Pearson & Grimes, Voth 4-B	*	1744
Cooke County (Walnut Bend)—		
Sinclair Prairie, McGeorge 3	490	4981
Grayson County (Wildcat)—		
W. J. Rutledge & Jas. O'Connor Drl. Co., M. Williams 1	*	5310
Jack County—		
Carson & McLarty Drl. Co., Worthington 2	*	2395
Showers & Moncrief, Rogers 3	458	3266
Montague County—		
Falls Ref. Co.-Yeargin, Bouldin 11-B	12	800
Golden, Tr., Bouldin-Pure 1	16	810
Montague County (Bonita)—		
United Prod. Co.-Continental, West 1	504	3944
Wichita County (K-M-A)—		
Consolidated Oil Co., James 9, sec 16	336	3963
Continental, Waggoner Bros. 8-B-C	616	3783
E. C. Oil Co., Mangold 10, blk 37	680	3783
Granite Trust Co. No. 2, Martin 5	584	3838
Hanlon & Buchanan, Fassett-Tuttle 3-E	864	4045
Omohundro et al, O. M. Jones 1	1008	4017
M. A. Love 2, Tr 2, blk 11	576	4100
Wichita County—		
Burns et al, Goetze 8, sec 2	20	879
Corbett et al, Bailey 3	*	585
Fisher & Dudley, Warren 9	240	1372
Houston et al, Noble Gray 10	4	250
Proctor et al, Foster 41-A, sec 1	38	1612
Shanor et al, Waggoner Est. 1-E, sec 14	*	1875
Wichita County (Wildcat)—		
Dubose et al, Frios 1, sec 15	*	708
Wilbarger County (Consolidated)—		
Consolidated Oil Co. & Hepler, Waggoner Est. 3-CC, sec 36	920	3782
Wise County (Wildcat)—		
C. A. Johnson et al, J. C. Vance 1	*	1401
Young County—		
Christie Bros., R. W. Davis 1, sec 1	*	3485
Hunt et al, H. M. Goss 2, sec 1592	9	1219
Pet. Producers Co. et al, Deitrich 9	*	1145
Taylor et al, L. T. Richardson 1	*	655
Trentman-Nunnelee & Rankin, Guinn 4, sec 1971	566	2774
W. E. Prod. Co., J. J. Grubbs 1-A, sec 647	1015	4440
Willis et al, Prideaux Bros. 1	*	812

*Failures; †Junked; ¶Million cu. ft. gas.

Texas drilling permits total 199

Permits for drilling 199 new wells in Texas were approved last week by the railroad commission, 26 less than were allowed the week before.

One permit was granted in the East Texas field in Gregg County, while nine locations were approved in the remaining part of the East Central Texas area.

Southwest Texas led the state with 50 permits, including 13 in Duval County, and Gulf Coast operators held second place with 40 locations. There were 32 locations reported from West Texas, including 10 in Yoakum County, while West Central Texas producers were allowed 18 permits.

The commission approved permits for drilling 33 new wells in North Texas, and 16 were granted to operators in the Panhandle.

Request 44-barrel allowable for Seymour

An allowable of 44 barrels for every calendar day for each of four producing wells in the Seymour field, Baylor County, was requested by British American Oil Producing Company at a hearing before the Texas Railroad Commission last week. The wells now produce 44 barrels each on five days of each week.

Testimony indicated that continuous production is desirable in order to handle the water efficiently. Production is obtained from a 2600-foot horizon.

East Texas Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Joiner Area—		
Kline et al, Maxwell 3 (½-ac)	1800	3763
Kilgore Area—		
Jackson-Wise & Markham, Christian 5 (16-ac)	5500	3721
Longview Area—		
Standard of Kansas, Fuller 6 (22.23-ac)	750	3652
Anderson County (Long Lake)—		
H. L. Hunt Oil Co., Broyles-Wolverton 2	100	5373
Stroube & Stroube, Monnig-Tidal 1	54	5261
Franklin County (Talco)—		
Texas Co., Barker 7	318	4266
Houston County (Navarro Crossing)—		
McGlothlin et al, Dailey-Sun 1	80	5883
Navarro County (Flag Lake)—		
Topaz Oil Co.-Butler-Calhoun, Trammel-Humble 4	472	3028
Red River County (Wildcat)—		
Dave Flesh & Hootkins, Bailey 1	*	3377
Rusk County (Wildcat)—		
Marietta Corp., Alford 1	*	2817

*Failures; †Junked; ¶Million cu. ft. gas.

Southwest Texas

Two Wilcox tests troubled with too much pressure

San Antonio. — Two Wilcox sand tests in South Texas were fighting heavy gas pressure to place this formation's play at the highest peak in the history of this area. The wildcats are expected to create a boom for the deep trend of this territory.

Tide Water Associated Oil Company's A. M. Bruni 7, on the Bruni structure of Webb County, cored a sand at 8954-56 feet and shale at 8956-69 feet, then started out of control. About 1500 sacks of commercial mud was pumped into hole after rams were closed on the blowout preventer. While bleeding off the pressure, the test flowed a large volume of oily mud and drilling water with a cut of gas.

Anderson Prichard Oil Company and Mills Bennett Production Corporation's Robinson 1 in the West Tuleta area of Bee County, was kicking and trying to blow out at 7921 feet, also in the Wilcox zone. It took a core at 7912-21 feet, then tried to get away. The rams were closed and the well immediately built up 950 pounds pressure against the heavy mud. About 3500 sacks of heavy commercial mud was pumped in, but the test still showed 400 pounds on the drill stem and 200 pounds on the casing. Finally, the well was killed and the core pulled. Five feet, apparently sand, was lost, but the four feet recovered contained shale with streaks of very coarse sand with saturation of distillate and heavy gas kick. The drill stem is stuck and efforts will be made to loosen it before coring ahead of making further tests. Some reports are that the well will be completed through drill stem as a gasser.

The importance of the Sparta-Wilcox trend was so greatly increased by these two wells that preparations are being made for a boom like exploratory and development program. Atlantic Refining Company is preparing to drill an 8500-foot test on the Thomaston prospect in DeWitt County, while another 8500-foot well is projected on or near the Slick field on the DeWitt-Goliad county line.

Marshall Purviss' Afflerbach 2, four miles southeast of Yorktown, topped the Carrizo zone at 7290 feet and had a solid sand body without salt water to 7672 feet, where it was abandoned. It may be later deepened to the main Wilcox zone. On the Fordtran prospect in Victoria County, Wellington Oil Company and Jack Frazier's Booth 1, was abandoned at 9118 feet. It showed salt water on drill-stem test at 8950-9017 feet. Davis & Company's McLane 1-A, at Garwood in Colorado County, was below 9700 feet with drill pipe stuck.

South Coast fields show for extensions

Corpus Christi. — Field extensions along the South Texas Gulf Coast last week will lead to new drilling in these areas.

Magnolia Petroleum Company's E. Stolze 1, ½ mile north of LaGloria field, Jim Wells County, cored oil sand at 6998-7011 feet, drilled to 7347 feet and set casing at 7060 feet. Late in the week, casing had been perforated in that sand and a production attempt was being attempted.

Running low about 45 feet, Magnolia Petroleum Company's Rust 1, one mile south of this field, was coring near 7000 feet.

In Nueces County, Union Produc-

ing Company was opening another Frio distillate sand for the Agua Dulce field. J. J. Elliff 2, Agua Dulce Grant, cored sand at 5081-88 feet and was carried to 5135 feet. Casing was landed at 5128 feet and completion was being effected through perforations. Drill-stem test recovered 630 feet of distillate and mud and showed 320 pounds working pressure in 5 minutes.

Finding salt water at 8384 feet, Continental Oil Company is reaming 12½-inch hole in St. Charles 1, deep wildcat 8½ miles northeast of Lamar in Aransas County. A string of 9⅝-inch protection casing will be set about this level before the hole is carried ahead.

Running about 25 feet lower than the field, George J. Greer's Ward Estate 1, about 3500 feet northeast of the

South Texas Completions

CORPUS CHRISTI DISTRICT

Company, Well and Location	Init. Prod. Bbls.	Depth
Brooks County—		
Humble, McGill 35, Kelsey	*	abnd.
Calhoun County—		
Buchanan, Morris & Dunwoody 14, Heyser	400	5596
DeWitt County—		
Purvis et al, Afflerbach 2, WC, 4 mi se Yorktown	*	7671
Jackson County—		
Humble, Kubecka 7, Cordelle	528	2690
Moore, Ahern, Clement 1 WC, Texaba area	*	6258
Jim Wells County—		
Auld & Lowrance, Temple 1	*	5715
Bowles, Whatley 1 WC, Ben Bolt	*	5475
Morgan, Fee F-4, Reynolds	*	5194
Texas, Miller A-8, Reynolds	375	5180
Pustejovsky 3-b, Reynolds	*	5667
Nueces County—		
Humble, King Ranch-Chiltipin 2, Luby	550	5058
Lockhart, Winfield 3, Agua Dulce	¶10 & 100	4838
Southern, King B-12, Bentonville-King	400	5425
Stanolind, Spessard 30, Luby	500	5177
Union, Purl 5, Agua Dulce	¶24 & 250	5048
Refugio County—		
Coronado, Rooke 32, La Rosa	600	5938
Morgan, Mitchell 7-D, Refugio	650	6552
Quintana, Williams B-5, Tomoconnor	2750	5923
San Patricio County—		
Southern, Whitlow 1, McCampbell	400	7151
Welch, Fee 2, East White Point	600	5676
Victoria County—		
Gulf, Keeran 16, Keeran	650	5617
Traylor B-27, Heyser	500	5490
Renwar, Stoner 1, WC 8 miles s of Victoria	*	6015
Wellington, Booth 1, WC Fordtran	*	9118

LAREDO DISTRICT

Duval County—		
Andrus, Peters 1, Rancho Solo	50	1882
Cox & Hamon, Cuellar 9, Hoffman	100	2676
Duval, Hoffman 4, Hoffman	200	2744
Government, Lundell 38, Lundell	80	1558
Hiawatha, Denman 3, Longhorn	450	4113
Southland 19, Southland	525	5394
Humble, Duval County Ranch 11-E, Piedre Lumbre	275	2146
Magnolia, DCRC 45 (201), Piedre Lumbre	375	2147
DCRC 2 (902), WC, Lopez area	*	2966
Miller & Sons, Miller 15, Longhorn	500	4905
The Texas Company, DCRC 31 (297), SRC	*	1059
Texas, DCRC 32 (190), Cedro Hill	15	1455
Jim Hogg County—		
Mayfair, Gutierrez 1 WC, 8 mi ne Randado	45	3223
McMullen County—		
Spice & Loma, Edrington 3 WC, Campana area	*	3082
Thornton, Henry 1 WC, west of Tilden	*	764
Starr County—		
Bishop & Moss, Ricaby 5, Ricaby	61	1438
Webb County—		
Magnolia, Volpe-Benavides 11, Volpe	52	2488
Zapata County—		
Buffalo, Hinnant 3-D, Mirando Valley	38	1994
Hinnant 4-D, Mirando Valley	46	1988
Interstate, Lopez 10, Mirando Valley	170	1782

SAN ANTONIO DISTRICT

Guadalupe County—		
Bluhawk, Fee 5, Darst Creek	74	2611
The Texas, Parrish 5, Darst Creek	83	2614

*Failures; †Junked; ¶Million cu. ft. gas.

West Ranch production in Jackson County, was below 5786 feet. It is reported to have cored sands in the 5500-foot sand and may make a producer. Carried as a closed operation, information is not available on the showings.

W. Stewart Boyle's Simon, 2000 feet northwest of the discovery in the Victoria field of Victoria County, was completing as a gas well in sand at 2529-64 feet, when plugged back from 2906 feet.

Jim Hogg discovery wells being tested

Laredo.—Mayfair Oil Corporation's Gutierrez 1, Block 4, Gutierrez Survey, and 8 miles northeast of Randado in Jim Hogg County, was pumping 35 barrels of 31.5-gravity pipe line oil per day from 3223 feet. The well cored sand at 3217-22 feet.

Offsetting this well on the south is acreage owned by The Texas Company, which farmed out the discovery lease. Sun Oil Company, W. C. McBride, and Magnolia Petroleum Company have holdings in the immediate vicinity.

Humble Oil & Refining Company may be opening production on its Mestina Oil & Gas Company lease. Mestina 2 cored oil and gas sand, apparently in the Pettus zone at 5399-5405 feet. Four drill-stem tests failed, then the well was cored to 5408 feet where two more tests failed. It was continuing to test. The well is located eight miles southeast of Hebbronville on the Palo Blanco Grant.

Seven Frio wells in Saxet are exempt from shutdowns

A special order has been issued by the Texas Railroad Commission exempting from all shutdowns 7 wells in the Saxet field which are producing from the Frio. The wells produce large volumes of water along with the oil.

Texas Gulf Coast

Prices soar on rumor of wildcat show near Alvin

Houston.—Humble Oil & Refining Company's H. Moore 1, a wildcat southwest of Alvin, Hooper & Wade Survey, Brazoria County, last week down to 7210 feet and being drilled "tight," is believed to have logged a show of gas and distillate in the Marginulina formation. Rumor of this show has increased royalty buying in the district. It is understood that prices have jumped to $250 per acre base for royalty.

Two miles south of the Collegeport area where Sun Oil Company opened a new gas field last July at 4143 feet, McDannald Oil Company's Woodhouse 1, Lewis De Moss Survey, Matagorda County, was preparing to make a test. The hole is bottomed at 5813 feet in shale. Salt water sands were cored at 4266 to 4276 feet and from 4296 to 4316 feet. Casing set at 4260 feet probably will be perforated opposite a gas sand at 4170 to 4200 feet.

To Test Outpost

Two thousand feet west of production at Martha, Liberty County, Stanolind Oil & Gas Company is preparing to make a production test on Tyrrell 1, I. & G. N. No. 7, after perforating from 8050 to 8056 feet. The hole is bottomed at 8355 feet in shale. Casing set at 8104 feet was perforated last week with 15 shots at 8060 to 8065 feet. The test is reported to have cored oil sands at 8000 to 8015 feet and from 8050 to 8065 feet. Martha produces from 8090 and 8110 feet.

Phillips Petroleum Company's Wimhurst 1, which discovered the deepest pay sand in Texas northwest of production at League City, was shut in last week at 10,967 feet. The shut-in pressure on tubing was 5200 pounds and on casing, 5400 pounds. This is one of the highest pressures ever shown on a Texas Gulf Coast well. The company plans to carry the well deeper.

Sun Oil Company will deepen Cade Estate 3, Caplen area, A. Dickson Survey, Galveston County. The hole, now bottomed at 7532 feet, is producing from 7350 to 7400 feet and from 7478 to 7480 feet.

In the Rosenberg area, Fort Bend County, Magnolia Petroleum Company's Huntington 1, H. Scott League, was drilling in salt water sands at 7900 feet at the end of the week. The wildcat is below the Yegua producing sand found in H. C. Cockburn's discovery well.

On the flank of Allen dome, Brazoria

Texas Gulf Coast Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Allen—		
Titanic Oil Co., Allen 1	*	5230
Clear Lake—		
Humble, Humble-West Fee C-22	498	5915
Fairbanks—		
Amerada-Stanolind, Foley 11	148	6855
Mills 14	192	6859
H. B. Owenby, White 6	192	6852
Fannett—		
Gulf, Burrell 12	126	4301
Hardin—		
Foroy Pet., Thompkins 2	242	7640
Hastings—		
Standard of Kansas, Butterfield 1	578	6113
Stanolind, Edwards 11	587	6080
Ford 22	555	6122
Ware 6	212	6097
Humble—		
F. C. Blackwood, Hirsch 4	203	1069
Lovall Lake—		
Humble, Broussard Trust 12	166	7807
Stanolind, Steinhagen A-3	190	7800
Markham—		
Hamil & Hamil, Sisk 4	358	3572
Thompson—		
Humble, Davis 20	573	5410
Turtle Bay—		
Stanolind, Amick 1	157	6610
South Cotton Lake—		
Humble, Lawrence C-3	146	6512
Withers—		
Texas Co., Pierce Estate C-65	78	5544
Chambers County—		
J. R. Turnbull, Kirby Pet. Co. 1, Cedar Bayou area, Chambers County School Land sur	218	6430
Harris County—		
Dick Schwab & Carlton's, Abe Gordon 1, Satsuma area, M. Wood sur	*	6740
Wilhite et al, Harris County Navigation District 1, Houston Ship Channel area, E. Thomas sur	*	5160

*Failures; †Junked; ¶Million cu. ft. gas.

County, Titanic Oil Company's Allen 1, McNeel Survey, was abandoned last week at 5230 feet after holding the attention of oil operators for some time. A sand cored at 4022 to 4032 feet was thought by some to be capable of reviving drilling in the old field. A drill-stem test showed oil and gas before the drill stem twisted off. Top of the fish was around 5092 feet.

Continuous operation sought for Plummer

Ann Oil Company has asked the Texas Railroad Commission to permit continuous operation of wells in the Plummer field, Bee County. At a hearing before the commission last week, the company presented evidence to show that it is conducting a salvage operation and that unless it recovers all of the oil now, it will be left in the reservoir.

Some wells are producing with gas-oil ratios as high as 46,000/1. However, gas-fluid ratios in these wells are only about 1000/1, the witness said. Premature abandonment of the wells is threatened unless relief is obtained, according to the testimony presented.

Louisiana Gulf Coast

Pan American may open new oil field in La Place area

Lake Charles.—St. John The Baptist Parish may have its first producing field next week as Pan American Production Company's Mill 1, La Place area, was running 2½-inch tubing after installing a Christmas tree and erecting storage tanks. The last drill-stem test on the wildcat, made at 8115-22 feet in 5 minutes through ¼-inch chokes, showed a surface pressure of 380 pounds. When the drill stem was pulled the 900-foot water cushion and 2 stands of gas cut mud and distillate were recovered. A production test is being made without setting screen. Mill 1, drilled to below 10,000 feet, had 5 drill-stem tests before making the present production test.

This may be a record year for discoveries in South Louisiana. It is closely approaching its 1938 record when 19 new fields were opened. Last week this year's thirteenth new field was discovered in St. Martin Parish. At the end of the week the fourteenth was being ushered in. Indications are that the fifteenth will be discovered in Lafourche Parish. In Plaquemines Parish and at Venice two new deep thick oil sands were discovered. Circles on the map show locations of late developments.

Shell Oil Company proved last week that Happytown prospect, St. Martin Parish, would produce oil when Iberville Land Company 1, Section 86-7s-8e, came in flowing pipe line oil from Oligocene sands at 9745 to 9758 feet at the rate of 14.74 barrels of 39-gravity oil per hour through a 10/64-inch choke with a tubing pressure of 1925 pounds and a casing pressure of 1875 pounds. Gas/oil ratio was 1160 to 1. Five-inch

casing set at 9819 feet was perforated with 40 shots; 2½-inch tubing was hung at 9725 feet.

Tide Water Associated Oil Company may open a new oil field in the Delta Farms area, Lafourche Parish, with Delta Farms 1. The hole is bottomed at 10,305 feet. Side wall cores were taken at 10,177 feet. An electrical log run to 9967 feet showed promising oil sands at 8748-54 feet, 8918-26 feet, 9511-21 feet, 9670 to 9720 feet and from 9925-35 feet.

About 1¼ miles west of production at Venice, Plaquemines Parish, Tide Water Associated Oil Company has logged a new and deeper oil sand in Buras Levee Board 6 and is running 7-inch casing. The hole is bottomed at 10,745 feet; an electrical log showed 168 feet of favorable oil sands at 10,496 to 10,664 feet and 70 feet of oil sand at 10,160 to 10,230 feet. Other shows were logged up the hole around 9600 feet. After casing is set the company will probably make a production test.

Venice is already producing from 5 sands, and the new strike will make Venice one of the largest productive salt domes in South Louisiana.

In the McInnis area, East Baton Rouge Parish, Goldin & Farris' McInnis 1 was coring in sandy shale at 6584 feet at the close of the week. It is reported a sand with an odor of oil was cored at 6568 to 6574 feet.

Two miles southwest of production at Sorrento, Ascension Parish, Sorrento Oil Company's Bernard 1 was down to 8000 feet in shale last week. An electrical log showed some resistivity around 7850 feet, but side wall cores of the sand failed to show any oil. This well is the deepest test in the area. Deep Oligocene production is the objective.

The Texas Company is preparing to test a new oil sand at Fausse Point field, Iberia Parish. State Lake Fausse Point was drilled below 5400 feet in salt. Casing was perforated at 5177-87 feet and squeezed with cement. The cement was drilled out to 5172 feet and the hole is being perforated at 5160-70 feet. Fausse Point has produced a small amount of oil from around 1123 feet, 6400 feet and 7900 feet.

Gulf Refining Company has logged a new oil sand in Grand Prairie Levee District A-5 at Grand Bay field, Plaquemines Parish. The sand was cored at 8054-78 feet and 9⅝-inch casing is being set. The next sand below this horizon at Grand Bay is at 8115 feet. The same operator's Grand Prairie Levee District 6-A, drilling in shale at 10,449 feet at the end of the week, is the deepest hole ever drilled in the field.

St. Gabriel prospect, Iberville Parish, appeared disappointing again when Shell Oil Company abandoned Natalbany Lumber Company 2 at 9532 feet. This is the second failure for the prospect by Shell. The well attracted considerable attention when slight shows of oil were cored around 9100 feet. These shows were never tested. The first wildcat on the prospect produced a little 20-gravity oil from around 9000 feet, but was abandoned.

California Company made a drill-stem test of Wilcox on Long Bell Lumber Company 2 in the Hickory Branch area, Beauregard Parish, and recovered only mud. The hole was drilled to 10,055 feet in sand, topped at 10,040 feet. The sand failed to show any evidence of oil when it was cored. Top of the Wilcox was encountered around 9940 feet.

Stanolind Oil & Gas Company's Jenkins 1, second well for the North Elton area, Allen Parish, failed to show any oil sands of importance on an electrical log run to 7760 feet. The well is lower on structure than the discovery well.

Southwest of Eola, Avoyelles Parish, Sid Richardson's Haas Investment Company 1-A was down to 8835 feet, below the regular Wilcox producing horizon at Eola.

At Bateman Lake, St. Mary Parish, The Texas Company recovered salt water last week when a test was made in a new deep sand in St. Mary Parish School Board 1. The well was perforated at 11,533-45 feet. The hole was plugged back and was perforated at 10,663-83 feet, where it showed dry gas. This is the first time that this gas sand has produced at Bateman Lake.

Cromwell sand pool near Dill on 20-acre spacing

Twenty-acre well spacing has been designated by the Oklahoma Corporation Commission for the Cromwell sand pool south of Dill pool, Okfuskee County. The area included is as follows: E½ SE 23, N½ NE 26, NW NW 25 in 11n-8e. The discovery well was completed August 9, 1938, in C NE NE 26-11n-8e from 3292 feet in Cromwell sand, pay being from 3475 to 3481 feet. The well is making 100 barrels of oil and 25 barrels of water daily.

Panhandle firms denied relief by commission

Panhandle operators who appeared before the Texas Railroad Commission last week for a conference on allowable increases for the area were denied any immediate relief. Whether the commission would make some adjustment during the month of December was doubtful.

South Louisiana Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Baton Rouge—		
W. V. Bowles, University Hills 3..	14	6506
Cameron Meadows—		
Magnolia, Cameron Meadows 25...	*	6120
Charenton—		
DeArmand, Landry 7	388	1159
Landry 4	194	1124
Landry 5	110	1142
Landry 8	406	1157
Kern 6	388	1162
Knisley Oil Co., LeBlanc 9.....	85	1134
Fifteen Oil Co., Brulator 2.....	143	1200
Pan American, Ecuer A-3.....	125	2700
Robichaux 8	*	1353
Veeder 15	228	1314
St. Mary Oil Co., Achee 6.....	175	1100
Eola—		
Amerada, White et al 1.....	672	8500
Sid Richardson, Haas 1-A.....	*	8835
Garden Island—		
Texas Co., State 37.....	267	5795
Grand Lake—		
Superior, State 4	260	8385
Golden Meadows —		
Bershire Oil Co., Nicol 9.....	179	2659
Boller & Rutledge, Cheramie 1-B..	61	2710
Texas Co., Falgout 5.....	116	2700
State Catfish Lake 4.....	*	2785
New Iberia —		
J. J. Hooper, Marstar 1.....	60	3800
Texas Co., Duhe 12	300	3644
North Crowley—		
Humble, Habetz 5.....	*	7925
Port Barre—		
Pan American, Garland 5.....	49	4800
Ville Platte—		
Continental, Opelousas-St. Landry 5	360	9045
Hirsch 4	267	8919
Calcasieu Parish—		
Gulf, Brannon 1, 16-11s-10w.....	*	9704
West Hackberry—		
Superior, Benson-Vincent 7.....	¶1	7350

*Failures; †Junked; ¶Million cu. ft. gas.

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Pine Island deep test finds igneous rock, plugs back

Shreveport. — The second hole in North Louisiana to drill below the base of Permian salt was plugged back last week to test the Lower Marine, after reaching igneous rock at 11,419 feet. Stanolind Oil & Gas Company's Dillon 131, C SE NE 14-21-15w, Caddo Parish, in the shallow Pine Island field, failed to reach the record set at 11,486 feet several months ago by R. W. Norton's Payne 1, SE SE 27-23n-16w, in the Rodessa field, Caddo Parish.

With elevation of 237 feet the deep Pine Island test cored from 11,417 to 11,419 feet and recovered 8 inches of hard dark-green-to-red igneous rock. Base of Permian salt was at 11,405 feet after topping the salt at 10,164 feet. Previously it had topped Smackover lime at 8953 feet, topped the Lower Marine (Cotton Valley) at 5995 feet, and Travis Peak at 3903 feet. After being plugged back to 9981 feet, casing was perforated from 7546-62 feet and a drill-stem test of the Lower Marine at that level showed only mud. Perforating and testing will continue at other levels after a squeeze job.

North Louisiana's only other test to go below the base of Permian salt continued to drill at 9506 feet in shale. This is Union Producing Company's Tensas Delta A-1, NE SW SE 8-22n-4e, Morehouse Parish, which logged Permian salt from 8114 to 9082 feet; elevation is 71 feet.

The Shreveport field's fiftieth oil well was completed last week in R. E. Allison's Ellerbe 3, SE NW 27-18n-14w, Caddo Parish, which showed salt water at 5601 feet and was plugged back and completed at 5553 feet flowing 10 barrels of oil per hour. Only one other rig is operating in the Shreveport field.

Operators arranged to drill out cement retainer preparatory to testing a squeeze job where salt water had appeared at 8354-83 feet in Lisbon Exploration Company's Roberta Vaughn 1, NW NE 36-21n-5w, deep test at Lisbon. If the squeeze job holds casing will be perforated at 8811 feet in the Lower Marine, for another test of that horizon. On the west edge of the Pettet (basal Glen Rose) lime producing area at Lisbon, E. T. Oakes swabbed Lloyd 1, Section 10-20n-5w, at 5330 feet, Lisbon's only other active operation.

North Louisiana Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Caddo Parish (Pine Island)—		
Bobby Manziel, Brooks 2, 17-21n-15w	•	1080
Texas Co., J. L. Shea 1, 1-20n-16w	175	1480
Caddo Parish (Shreveport)—		
R. E. Allison, Ellerbe et al 3, 27-18n-14w	250	5601
Caddo Parish (Wildcat)—		
D. J. Crawford et al, Lloyd 1, 29-17n-13w	•	6003
Morehouse Parish (Monroe)—		
United Carbon Co., Tulsa Plant Fee 3, 4-21n-5e	¶6	2189
Sabine Parish (Spring Ridge)—		
W. E. Mannes, Stephens 1, 17-9n-11w	•	3724

•Failures; †Junked; ¶Million cu. ft. gas.

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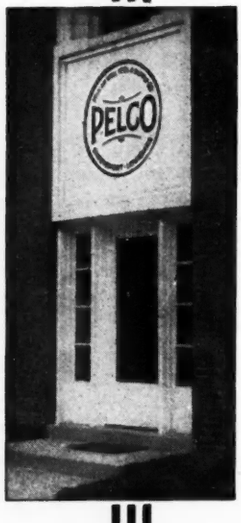

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Magnolia south edge well is surprise with good flow

El Dorado.—The eleventh Smackover lime oil well was completed last week in the Village field, Columbia County, in Standard Oil Company of Louisiana's Jameson Unit 1, NW NW 14-17-19, flowing 280 barrels of oil daily at 7417 feet after logging 16 feet of saturation from 7401 to 7417 feet.

Magnolia field's seventy-seventh oil well, completed last week, extended production ¼ mile south in Normandie Oil Company's J. Dees 2, SE SE 24-17-20, flowing 25 barrels of oil per hour, on ¼-inch tubing choke from 7559 feet. Contrary to some previous theories, this well was a good producer and does not define producing limits to the south. Two other tests in this field last week reached the Smackover lime producing horizon last week.

Taking what probably was the final core to 8256 feet. Tide Water Associated Oil Company's Clarke 1, NE NE 16-18-19, Columbia County, looming as the fourth oil well for the Atlanta field, Columbia County, operators ran electrical survey preparatory to setting final casing.

Standard Oil Company of Louisiana's two geophysical wildcat prospects in Columbia County drilled last week below 7000 feet; R. S. Warnock 1, SE SE 36-16-20, at 7183 feet and Petty Stave Company 1, NE NE 4-17-21, at 7520 feet.

Arkansas permits

El Dorado, Ark.—Six drilling permits were issued last week by the Arkansas Oil and Gas Commission, as follows: Columbia County—Gulf Refining Company, Nancy E. Lewis 1, NEc NE NE 12-18-23; Shell Oil Company, Incorporated, D. H. Lewis 1, C NE NE 19-17-19; Standard Oil Company of Louisiana, S. T. Crone 4, C SW SE 8-16-22; LaFayette County—East Texas Refining Company and Erwin & Leach, Cleve Warren C-1, C NE SE NW 24-16-24; Ouachita County — Sherry-O'Brien, Cook Estate 2, SEc NW SW 27-15-18; Sebastian County — Ozark Natural Gas Company, John Keck 1, C SE SE 16-8-29.

Louisiana permits

Shreveport. — Forty drilling permits were issued last week by the Louisiana Conservation Commission, of which 20 were in North Louisiana, divided among the following parishes: Bossier, 2; Caddo, 11; LaSalle, 1; Sabine, 4, and Union, 2. The 20 in South Louisiana were in the following parishes: Acadia, 2; Avoyelles, 1; Beauregard, 1; Cameron, 4; Iberia, 2; Iberville, 1; Lafourche, 2; Plaquemines, 1; St. Landry, 1; St. Mary, 4, and Vermilion, 1.

Arkansas Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Columbia County (Magnolia)—		
Normandie Oil Corp., J. Dees 2, 24-17-20	750	7559
Columbia County (Village)—		
Standard, Jameson et al 1, 14-17-19	280	7417
La Fayette (Lewisville-Stamps)—		
East Texas Ref. Co. et al, Patten A-2, 24-16-24	60	3480

•Failures; †Junked; ¶Million cu. ft. gas.

New Mexico

Lea County operations to increase rest of this year

Hobbs, N. M.—A producer and a dry hole were recorded by the Halfway pool, recent oil strike made in western Lea County. Weslea Oil Company's Cleveland-Texaco 1-C, C N½ NE NW 21-20s-32e, ½ mile south of its discovery pumper, quit in sulphur water at 2673 feet, with no oil saturation of any consequence at the projected pay level. Top of lime was called at 2324 feet, with an elevation of 3503 feet, or only 3 feet lower structurally than the discovery well, according to Frank Farley, an officer of the company. No porosity was present in the upper lime. The company's Moore-Texaco 2, a west offset to the dry hole, landed surface pipe, and is awaiting orders.

Argo Oil Corporation's State-Texaco 1, C NW SW 16-20s-32e,¼ mile west of the Halfway pool discovery, swabbed 4 barrels of pipe line oil hourly, and is rated as a 200-barrel pumper after using 500 gallons of acid at 2654-57 feet. This well checked lower on the lime marker, and top of pay is 29 feet below that of the discovery. Argo Oil Corporation has made location for Humphries-Texaco 1, an indirect northwest offset to its pumper. Continental Oil Company et al's Langston 1-A-15, C SW SW 15-20s-32e, an east outpost, was drilling at 1800 feet.

Operations in Lea County promise to register a substantial increase in volume the remainder of this year, as operators are authorizing new work that will not be completed until 1940 budgets are available. The county was credited with 10 new tests the past week.

Magnolia Petroleum Company's State-Bridges 46, C NE NW 13-17s-34e, northeast edge of the Vacuum field, pumped 138 barrels of oil in 11½ hours on completion test at 4700 feet. It was shot with 250 quarts of nitro at 4560-4660 feet, resulting in a good fluid level, but the gas volume is not adequate to flow the 46-barrel daily allowable. The company's State-Bridges 50, ¼ mile north of the above well, was drilling at 1730 feet. This field gained 3 new operations, including Humble Oil & Refining Company's State 12-K, C NE SW 28-17s-35e, and Phillips Petroleum Company's State-Hale 6, involving the final location on the 240-acre lease. The Texas Company's State 1-AA, C NE NW 3-18s-34e, has rigged up for a southwest outpost.

Stanolind Oil & Gas Company's Gilluly 6-B, C N½ NE NE 21-20s-37e, near southeast edge of the Monument area, is reported to have cemented off gas rated at 30,000,000 feet daily after blowout at 3423 feet. then skidded rig. Parted casing strings caused the junked hole.

The prolific lime area between the Eunice and Penrose fields accounted for 3 new operations, and will continue active for a period. N. G. Penrose and Arch Rowan's Brown 1, C W½ NE NW 18-22s-37e, is seeking a southeast extension, while Repollo Oil Company's State 7-D-157, SE SE SW 12-22s-36e, is a southwest outpost. Barney Cockburn et al's Mattern 2, SWc 722s-37e, offsets 3 large producers.

Rodman Supply Company has been granted an acreage farmout by Humble Oil & Refining Company on the extreme east edge of the Hardy field, and is starting operations on Hardison 2, SW NW NE 34-21s-37e. Gulf Oil Corporation's Mattern 4-B, SEc 30-21s-37e, is near west flank of the area.

Wilson Oil Company, sole operator in the West Eunice lime pool, is completing State-Shell 2, C SE SW 7-21s-35e, as the fourth pumper after plugging back from 3866 feet to 3850 feet because of water. Broken saturation at 3780-3815 feet was shot with 190 quarts nitro, resulting in 1000 feet of oil in hole. A west extension will be sought in drilling State-Shell 3, near C NW SW 7-21s-35e.

An exceptionally large producer for the Loco Hills field, Eddy County, was scored by C. M. Bassett and Birney's State 2-B, NE NE SW 2-18s-29e, after nitro shot in lime saturation at 2638-56 feet. The well flowed 263 barrels of oil in 3 hours through casing. An east offset has been authorized by Continental Oil Company. Leo R. Manning et al's McClay 1, NE NW NE 21-18s-30e, semi-wildcat to the southeast of Loco Hills, was drilling at 2400 feet, with production due near the 3200-foot level.

Chaves County has been included in the development program proposed for the shallow oil area uncovered in northern Eddy County last month by B. H. Nolen et al's A. Iles 1-A, SEc 17-16s-29e, which is rated as a 30-barrel pumper after nitro shot in sand at 1803-24 feet. Authorization of 2 tests in Chaves County makes a total of 9 tests staked on the strength of the Nolen strike.

New Mexico Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Eddy County—		
Continental, State 1-L-16, c nw nw 16-18s-29e	95	2626
Danciger, Turner 5-A, c n½ nw nw 19-17s-31e	188	3518
Franklin Pet. Co., Ballard 3-A, nw se ne 1-18s-29e	500	2795
Underwood & Sanders, Miller 2-a, sw nw nw 4-18s-29e	86	2700
Woolley et al, Beeson 2-D, sw nw se 31-17s-30e	430	2855
Yates et al, Yates 3-A, nw se nw 6-18s-30e	500	2845
Lea County (Cooper)—		
Gulf, Cooper 2, c nw sw 11-24s-36e	310	3513
Lea County (Eunice)—		
Ohio, State-McDonald 11, nec 13-22s-36e	1080	3735
Repollo, State 6-D-157, se sw se 12-22s-36e	215	3750
Lea County (Mattix)—		
Continental et al, Jack 6-B-27, c sw se 27-24s-37e	840	3527
Lea County (Maljamar)—		
Cockburn et al, Baish 3-B, c nw nw 28-17s-32e	200	3776
Miller 4, c nw nw 26-17s-32e	150	4029
Lea County (Monument)—		
Stanolind, Gilluly 6-B, c n½ ne ne 21-20s-37e	†	3423
Lea County (Penrose)—		
Gulf, Christmas 1-C, nwc 18-22s-37e	2736	3730
N. G. Penrose-Arch Rowan, Mattern 2, sw ne sw 7-22s-37e	480	3744
Peters et al, State-Humble 1-H, nwc se 34-22s-37e	800	3648
Lea County (Vacuum)—		
Magnolia, State-Bridges 46, c ne nw 13-17s-34e	275	4700
State-Bridges 47, c ne sw 24-17s-34e	336	4680
San Juan County—		
Continental & Santa Fe Corp., Rattlesnake 97, c s½ sw 2-29n-19w	49	801
Rattlesnake 98, c se sw 12-29n-19w	102	828

•Failures; †Junked; ¶Million cu. ft. gas.

Michigan

Traverse pumper extends Overisel-Oldebekking south

Mt. Pleasant, Mich.—A half-mile extension south to the old Overisel-Oldebekking pool in Overisel Township, Allegan County, was established with Charley Cook's Kopper 1, NE NE NW, Section 34-4n-14w, pumping 75 barrels a day natural from Traverse at 1469 feet. Five new locations promise the first activity in the area since last year.

Gordon Oil Company's Gypsum 2, NW SE SW, Section 34-7n-12, Walker Township, Kent County, flowed 250 barrels the first 24-hours after acid from Traverse lime at 1900 feet to provide an east extension of ½ mile to Walker field.

D. D. Battjes' City of Grand Rapids 1, NE NW NE, Section 3-7n-11w, Grand Rapids Township, Kent County, 9 miles northeast of Walker, was waiting on a string of 5-inch casing to test a Monroe lime oil show logged at 2588 feet, 28 feet in the zone. However, while being closely watched, the Monroe show produced no major excitement. Numerous shows have been reported in Southwestern Michigan in the past without materializing into commercial zones. The only commercial formation to date has been the Traverse. Traverse topped at 2233 feet in the Battjes test was dry.

Union Oil Company's McNulty 1, Section 13-3s-13w, Van Buren County, which had a reported show at 1490 feet in Monroe, was junked this week at 1496 feet.

Michigan Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Allegan County—		
Leonard Blood, Knox 1, nw se nw 4-2n-16w	*	1360
Socony Vacuum, Norgaard 6, nw sw sw 2-4n-13w	115	1624
Gordon Oil Co., Twining 1, se sw sw 3-4n-13w	*	1675
Voorhees Drlg. Co., Schumaker 2, ne nw nw 12-4n-13w	150	1603
Isabella County—		
Pure, Embrey B3, c n½ sw nw 3-14n-6w	310	3613
Kent County—		
Century Oil Co., Golf Club 1, ne ne nw 1-7n-12w	*	2115
Gordon Oil Co., Trust Co. 1, sw se se 20-7n-12w	*	1935
Gypsum 2, nw se sw 34-7n-12w	225	1778
Wolverine Nat. Gas Co., Murray 1, se sw nw 29-7n-12w	500	1905
Walker Twp 1, nw nw se 29-7n-12w	105	1902
Fisher-McCall, Sackner 1, se sw ne 29-7n-12w	190	1939
Pratt 1, se se ne 23-6n-12w	30	1909
Mich. Devonian, McCrath 1, sw ne ne 29-7n-12w	20	1949
H. C. William, Thurkettle 2, nw ne sw 29-7n-12w	900	1890
Smith Pet. Corp., O'Sullivan 3, nw sw sw 30-7n-12w	200	1865
Gilbert 9, se se nw 4-6n-12w	250	1773
Bob King, Haggerty 1, sw nw nw 33-7n-12w	120	1895
Certain-teed Prod. Co., Fee 3, sw ne ne 4-6n-12w	135	1776
Crown Dev. Co., Land 3, ne nw se 23-6n-12w	30	1900
Mecosta County—		
Taggart Brothers, Fee 24, c nw 10-14n-9w	¶10	1566
Muskegon County—		
Lentz & Miller, Guerene 1, nw nw nw 28-10n-15w	*	770
Ogemaw County—		
Weber Oil Co., Hyslop 2, sw ne nw 28-22n-2e	25	2735
Ottawa County—		
Columbia Oil Co., Trilck 1, ne nw ne 31-9n-13w	*	2515
Twin Drilling Co., Park 4, se ne ne 25-7n-13w	950	1913
Van Buren County—		
Burr Oil Co., Van Alstyne 1, se ne nw 4-2s-13w	*	1401
Union Oil Co., McNulty 1, ne nw se 13-3s-13w	*	1496
Huffman Drlg. Co., Dowd 1, ne nw se 28-2s-16w	*	1058
A. G. Morency, Corey 1, nw sw sw 7-1s-14w	5	1199
Lockwood et al, Henry 3, se sw nw 12-1s-15w	*	1200
Wever Oil Co., Mich. Cen. RR. 4, sw se sw 12-1s-15w	*	1248

*Failures; †Junked; ¶Million cu. ft. gas.

Rocky Mountain States

North Geary anticline test to carry on to Tensleep

Casper, Wyo.—Plans for a Tensleep test in Continental Oil Company's McGrath 1, CNW SW 15-34n-78w, drilling on the North Geary anticline in Natrona County, Central Wyoming, have been anounced. The well drilled through the Sundance without encountering commercial showings and is making hole below 7037 feet in Chugwater red beds topped at 7012 feet. The Tensleep (Pennsylvanian) horizons are expected around 8500 feet. The well encountered saturation in Muddy (Dakota) formations several weeks ago and will be given a thorough test to determine the productivity of all formations after the Tensleep horizon is drilled. It is 7 miles southwest of General Petroleum Corporation's discovery well on the Cole Creek field which also found the Sundance dry. The Tensleep was not drilled at the Cole Creek location.

Working to bolster a reduced gas supply from the Billy Creek field, in Johnson County, Montana-Dakota Utilities Company has completed Rider 4, SE SE NW 17-48n-82w, for 680,000 cubic feet of gas daily. The field supplies gas for Sheridan and Buffalo in northern Wyoming, which district is threatened with a shortage of gas as a result of depletion in the field. This is the eleventh well to complete in the field, 7 of the previous 10 wells being gas producers.

Joint test of the Minnelusa Oil Corporation and the Henderson Producing Company in the Elk Basin field, Carbon County, Southern Montana, is preparing to install rotary equipment to drill ahead from 2046 feet where it has been deepened from old total depth at 1810 feet with standard equipment. The companies' Elk 11, 1-H-11, SE SE NW 35-9s-23e, is to be carried to the Dakota-Lakota horizon. Original producing formations were the Wall Creek sands of the Frontier formations.

Mountain States Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
MONTANA		
Toole County (Kevin-Sunburst field)—		
Hannah-Porter, Estonson 2, cnl e sw 19-33n-1w	*	1344
Henry Vanderpas, Ward 3, ne nw nw 33-35n-3w	*	1722
Blaine County (Bowes gas field)—		
Montana Gas Corp., Bowes 1, ne¼ se¼ nw¼ 34-32n-19e	¶16	795
WYOMING		
Converse County (Shawnee Creek field)—		
New Era Fuel Corp., Simonson 1, nw ne se 16-32n-69w	*	944
Niobrara County (Lance Creek field)—		
C. L. Price, Lamb 2, cse nw nw 7-35n-65w	1704	5487

*Failures; †Junked; ¶Million cu. ft. gas.

California

Seeks extension of Ford horizon at Wilmington

Los Angeles.—A northwest extension to the Ford zone in Wilmington is being sought by Bren Oil Company's Stephens-Woodman 1, situated between Lomita and Sepulveda boulevards, west of Main Street. This project, located on a 180-acre block, has reached 5300 feet, having taken in a horizon from 4900 to bottom which is being cored preparatory to landing of a string of 8⅝-inch casing.

Rio Bravo, Kern County, has a new deep producer, Union Oil Company's KCL 41-34, which swabbed in for an initial yield of 1133 barrels of clean 38.5-gravity oil per day from 11,475 feet. It has been choked in to conform to curtailment requirements.

Richfield Oil Corporation's KCL-Fruitvale 83-29, a semi-wildcat located in the E¼ corner of Section 29-29-27, in West Fruitvale, Kern County, encountered base of the Etchegoin at 3942 feet and oil sand between 4365 to 4394 feet. A production test will be attempted southwest of present productive limits.

California Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Los Angeles County (Whittier)—		
C. W. Partridge, Whittier Crude 14	20	1310
Orange County (Huntington Beach)—		
Southwest Exploration, State 21	589	5000
Los Angeles County (West Montebello)—		
Beacon Oil, Montebello 1	175	7624
R. R. Bush, Zanetti 1	400	7692
Crail Bros., Cowan 2	530	7636
Crestline Oil, Crestline-Montebello 1	150	7655
Fullerton, Scott-Arnold 2	50	7630
Mono Oil, Forman 1	200	7620
Standard, Whitehead 7	460	7680
Union, Wilcox 1	650	6695
United Montebello, No. 3	335	7650
Wood-Callahan, Thill 1	410	7625
Los Angeles County (Torrance)—		
General, Poggi 15	46	5183
Los Angeles County (Wilmington)—		
Simon Bernstein, LB Harbor (LB) 12	10	3595
Interstate Inv. Co., Harbor 2	120	3211
Kern County (Greeley-Northwest Area)—		
General, Sullivan 1	1500	11,510
Kern County (Coles Levee)—		
Ohio, KCL F-4-45-11	1200	9864
Fresno County (Kettleman No. Dome)—		
K. N. D. A., No. 25-22Q	3123	7980
Kern County (Midway-Sunset)—		
Oxford Oil Co., No. 6	175	2056
Kern County (Mt. Poso)—		
Ring Oil Co., Shapiro 8	500	1710
G & V Oil Ltd., Hill 1A	*	980
Kern County (Mountain View-South)—		
Richfield, Mott 2	871	6155
Kern County (Rio Bravo)—		
Union, KCL 41-34	1133	11,475
Kern County (Ten Section)—		
Shell, KCL B-21-28	3032	8220
Santa Barbara County (Santa Maria Valley)—		
W. R. Gerard, Gerard-Brensier 2	3500	5060
Union, Frank Vicente 6	2540	5294
Ventura County (San Miguelito-Padre Canyon)—		
Continental, Grubb 12	655	7314
Ventura County (Ventura Avenue)—		
Shell, Taylor 107	601	5740
Kern County (Midway)—		
Robt. A. Foster, McKee 1	*	5075
Los Angeles County (Long Beach)—		
Signal Oil & Gas, PE 1	*	4476
Kern County (Grapevine-Wheeler Ridge Area)—		
Shell, Pleito A-37-25	*	4187

*Failures; †Junked; ¶Million cu. ft. gas.

WILDCAT REPORT
New Starts and Completions

STATE	WILDCATS STARTED		WILDCAT TESTS COMPLETED							
			Total		Oil		Gas		Dry	
	This Week	This Year	This Week	This Year	This Week	This Year	This Week	This Year	This Week	This Year
Arizona	1	1	...	...	...	...	...	...	...	...
Alabama	...	5	...	3	...	...	...	...	...	3
Arkansas	1	36	...	24	...	2	...	...	...	22
California	2	187	...	76	...	20	...	2	...	54
Colorado	...	4	...	2	...	...	...	...	...	2
Florida	...	3	...	1	...	...	...	...	...	1
Georgia	...	4	...	1	...	...	...	...	...	1
Illinois	35	582	20	433	4	31	...	2	16	400
Indiana	5	74	...	44	...	9	...	1	...	34
Kansas	4	233	5	220	1	57	...	10	4	153
Kentucky	3	65	2	36	...	8	...	...	2	28
Louisiana	2	123	1	97	...	14	...	3	1	80
North Louisiana	1	41	...	29	...	3	...	1	...	25
South Louisiana	1	82	1	68	...	11	...	2	1	55
Maryland	...	1	...	...	...	...	...	...	...	...
Michigan	2	247	6	310	...	21	...	...	6	289
Mississippi	...	25	...	10	...	1	...	...	...	9
Missouri	1	59	...	33	...	...	...	3	...	30
Montana	1	6	1	4	1	1	...	...	...	3
Nebraska	...	1	...	1	...	...	...	...	...	1
New Mexico	2	41	...	27	...	1	...	1	...	25
New York	...	1	...	5	...	1	...	2	...	2
Oklahoma	2	163	5	166	2	22	1	9	2	135
Ohio	...	4	1	12	...	1	...	...	1	11
Pennsylvania	...	3	...	6	...	...	...	1	...	5
South Dakota	...	2	...	2	...	...	...	...	...	2
Texas	15	1,017	19	1,074	2	97	...	22	17	955
East Texas	2	111	2	103	...	3	...	1	2	99
North Texas	2	130	7	211	1	28	...	1	6	182
Gulf Coast	...	112	2	92	1	9	...	1	1	82
Panhandle	...	11	...	10	...	...	...	1	...	9
South Texas	9	482	5	486	...	38	...	16	5	432
West Texas	2	171	3	172	...	19	...	2	3	151
Utah	...	1	...	...	...	...	...	...	...	...
West Virginia	...	2	...	1	...	...	...	...	...	1
Wyoming	...	7	...	4	...	...	...	...	...	4
Total U. S.	76	2,897	60	2,592	10	286	1	56	49	2,250

ARKANSAS

FIRST REPORTS

Sebastian County — Ozark Nat. Gas Co.'s John Keck 1, c se se 16-8-29, materials.

ARIZONA

FIRST REPORTS

Apache County—Franco-Arizona Oil Co.'s Government 1, se se ne 14-14n-26e, td 2000 ft, running 9½ in csg to bottom. Contract depth 4000 ft for the well.

CALIFORNIA

FIRST REPORTS

Fresno County—Jergins Oil Co.'s Penoche 1, ne ne sw 29-14-3, Mendota area, lcn.

Kern County—B. E. Borrhus' No. 2 nw 31-31-22, Panorama Hills, rig.

Los Angeles County—Schaeffer et al, No. 1, nec 30-3-19, Moorpark area, dr.

Kern County—Coronet Oil Co., Coronet 4, nec 17-4-21, Ojai area, dr.

ILLINOIS

FIRST REPORTS

Bond County—Paul Harr's F. T. Thacker 1, c e½ ne 29-7n-4w, pits dug.

Clark County—Trenton Rock Oil Co.'s Black 2, ne se nw 14-11n-14w, set 10-inch to 67 ft, 6-inch to 432 ft, odor oil 560 ft, dr 562 ft.

Clinton County—M. C. Trumbull et al's H. Ackman 1, se sw se 22-2n-3w, loc. M. C. Trumbull et al's Geo. Peters 1, ne ne ne 4-1n-4w, rigging up machine. Lewis Lilly et al's (Cunningham's) Grim 1, 450 ft from south line and 725 ft from east line, ne lot 24, block 1, Pullen subdivision No. 3, Centralia townsite, deepening from Benoist, top 1361 ft, to Devonian, 7-inch to 1357 ft, with bottom 1361 ft.

Coles County—LeRoy Trulock & Mumford's Trulock 1, se se ne 7-12n-14w, fishing for bailer 295 ft.

Cook County—Crane et al's Wulf 1, sw nw ne 2-42n-12e, Northfield tnp, sd 210 ft.

Cumberland County — National Consumers' Ward 1, ne se ne 17-9n-9e, Woodbury tnp, sd 2152 ft. D. Huddlston et al's E. Young 1, ne se nw 6-9n-11e, Crooked Creek tnp, dr 920 ft.

Edgar County—Sanders & Walton's Weaver 2, nw sw nw 24-14n-14w, Embarrass tnp, sd 200 ft.

Edwards County — Anderson-Broadus' Geo. Harmes 1, sw ne sw 17-1s-14w, spud.

Effingham County—Minerva Oil Co.'s C. M. Reed Estate 1, 860 ft from north line and 330 ft from east line, ne sw 10-6n-5e, set 8-inch to 85 ft, dr 540 ft. A. Kingwood Oil Company farmout.

Jefferson County — Transcontinental's Carroll 1, se ne se 16-2s-1e, old well cleaning out, top Rosiclare 2223 ft, top Fredonia 2242 ft, plugged back to 2239 ft from 2270½ ft, 5½-inch casing set to 2237 ft.

Jersey County—Ames' Knight 1, sw ne nw 32-7n-11w, dr 200 ft.

Lawrence County—Sewards & McDougal's Garvey 1, se nw sw 5-2n-11w, Dennison tnp, dr 1375 ft. Dr. Sunderland et al's Leathers 1, nw sw sw 20-2n-11w, Dennison tnp, woc at 1850 ft. Anne Bell Oil Co.'s M. Wright 1, nw nw nw 15-2n-13w, Lukin tnp, dr.

Lee County—E. L. Otto's Barnes 1, se ne sw 6-19n-10e, May tnp, sd 45 ft.

McDonough County—Chas. Measely's H. W. Cummings 1, nw ne ne 21-4n-4w, Lamoine tnp, dr.

Monroe County—S. B. Remington's Kolmer 1, se cor Tax Lot 6, Survey 641, Claim 1645, 2s-9w, Waterloo tnp, dr.

Montgomery County—L. L. Robb's D. Davis 1, ne ne sw 3-8n-5w, South Litchfield tnp, sd 680 ft.

Peoria County—Blue Bell Oil Co.'s Kyle 1, nw sw nw 17-8n-6e, Logan tnp, sd 435 ft. Algona Oil Co.'s Chas. Cramer 1, se se sw 27-8n-5e, dr.

Schuyler County—H. M. Miller's J. R. Wilson 1, sw sw ne 2-3n-3w, Brooklyn tnp, dr.

Wabash County—U. S. Oil Co.'s J. H. Stillwell 1, sw nw se 7-1n-11w, Wabash tnp, dk. Misener & Graham's G. W. Rose 1, nw nw se 15-2s-13w, Coffee tnp, dk. A. M. Lacy's Holsen 1, 500 ft from east line and 100 ft from north line ne se 27-1n-12w, rig.

Wayne County—Wiser Oil Co.'s G. Shannon 1, c w½ ne sw 25-2n-8e, Elm River tnp, dr. Hayes, Schneidman & Soebbing's Murphy 1, c nw nw ne 6-3s-9e, Leech tnp, sd 3422 ft. New Penn Oil Co.'s Wagoner 1, 350 ft from north line and 250 ft from west line, sec 30-2s-9e, to deepen from 3441 ft.

White County—Roach & Voyles' R. E. Finch 1, ne nw nw 32-3s-8e, Mill Shoals tnp, dk. Carl Mochael's C. O. Myers 1, se se sw 32-4s-9e, Burnt Prairie tnp, moving in machine. O'Meara's Stine 1, nw se nw 7-4s-11e, Phillips tnp, dk. B. Martin's Belle-Fitzgerald 1, ne sw ne 30-4s-11e Phillips tnp, waiting on cement. Jarvis Bros.' E. Spencer 1, ne se nw 31-4s-11e, Phillips tnp, moving in rotary. W. R. Hayes' Orman 1, nw ne nw 18-6s-10e, rigging up rotary.

COMPLETIONS

Coles County—Miller's Blagg 1, se se ne 9-11n-10e, Hutton tnp, abnd loc.

Edwards County—Longhorn Oil Co.'s Mary Kraft 1, sw nw sw 31-2s-14w, French Creek tnp, top McClosky 3120 ft, abnd 3175 ft. C. G. McFadden's Charles Bump 1, c se sw 34-2s-14w, French Creek tnp, top Weiler 2625 ft, pumped 240 bbls oil and 15 bbls water, td 2643 ft.

Franklin County—W. R. Hayes' Old Ben Coal Corp. 1, se sw se 26-5s-1e, Goode tnp, top St. Louis 2920 ft, abnd 3101 ft. Phillips Petroleum Co.'s Boyles 1, ne nw se 19-5s-3e, Ewing tnp, top St. Louis 2985 ft, abnd 3073 ft.

Johnson County—Coates et al's Albright 1, ne nw se 22-12s-2e, Elvira tnp, top Salem 1680 ft, abnd 1747 ft.

Lawrence County—Walter Payne's Patrick Bros. 1, nw sw ne 28-4n-11w, Lawrence tnp, top Kirkwood 1545 ft, abnd 2520 ft.

Marion County—Shell Oil Co.'s Lutz 2, nw nw se 18-3n-1e, Carrigan tnp, top Benoist 1429 ft, plugged back to 1439 ft from 1442 ft, produced 156 bbls oil and 39 bbls water. Centralia Refining Co.'s Henning 1, c sw sw 20-3n-1e, Carrigan tnp, top Benoist 1559 ft, abnd 1580 ft. Dunn et al's Meredith 1, nw ne nw 10-2n-1e, Odin tnp, top Devonian 3265 ft, abnd 3369 ft. Dunn et al's Meredith 2, c ne nw se 10-2n-1e, Odin tnp, abnd loc. Ewing et al's C. McMackin 1, nw se sw 6-2n-3e, Salem tnp, top McClosky 2381 ft, abnd 2430 ft.

Monroe County—Charles T. Judd's Kohmar 1, sw cor Tax Lot 6, Survey 641, Claim 1645, 2s-10w, abnd 576 ft.

Perry County—L. C. Sivinmel's Kinney 1, ne ne nw 13-5s-2w, Duquoin tnp, top Fredonia 1551 ft, abnd 1582 ft.

Wabash County—Dallas Hawkins' Cowling 1, se ne se 18-2s-13w, Coffee tnp, top McClosky 2800 ft, water, abnd 2808 ft.

Wayne County—New Penn Oil Co.'s Wagoner 1, 350 ft from north line and 250 ft from west line, sec 30-2s-9e, discovery of Golden Gate, deepened from McClosky at 3441 ft, top St. Louis 3490 ft, pumped 3 bbls oil and 8 bbls water in 24 hrs, continued as McClosky well.

White County—Continental Oil Co.'s G. P. Hanna 1, se se nw 28-5s-10e, Hawthorne tnp, top McClosky 3090 ft, water, abnd 3143 ft. J. W. Carter et al's W. A. Johnson 1, ne sw ne 12-4s-10e, Phillips tnp, top McClosky 3191 ft, produced 210 bbls oil and 15 bbls water, td 3201 ft. Sun Oil Co.'s H. J. Garner 1, sw se sw 1-5s-10e, Hawthorne tnp, top Aux Vases 2942 ft, pumped 20 bbls oil, plugged back to 2964 ft from 3005 ft.

Williamson County — Adams & Doran's Moore 1, se ne ne 4-10s-3e, Creal Springs tnp, top Fredonia 2376 ft, abnd 2462 ft.

INDIANA

FIRST REPORTS

Gibson County—W. F. Lacy's P. Julian 1, c ne nw se 26-3s-14w, to deepen from 2525 ft, top Menard 2033 ft, Tar Springs 2112 ft, Glen Dean 2275 ft, dk.

Knox County—Wiggins et al's State Life Insurance Co. 1, sw sw nw 14-1s-12w, moving in rotary.

Perry County—H. J. Baker's Peters 1, 50 ft from east line and 100 ft from south line nw nw 11-5s-3w, dr 210 ft.

Posey County—Sun Oil Co.'s Julia Gottman 1, nw sw se 35-6s-12w, rigging up rotary.

Spencer County—Sycamore Oil Co.'s Prudential Life Insurance Co. 1, 76 ft from north line and 200 ft from west line, sw nw 6-7s-7w, rigging up machine.

KANSAS

FIRST REPORTS

Barton County—Schneider's Steckel 1, c w½ sw ne 11-20-12w, rig.

Russell County—Shell's Bender 1, swc se 20-15-14w, pits.

Sheridan County—Cities Service Oil Co.'s McGinnis 1, swc nw 10-9-27w, mim.

Stafford County—Seaney et al's Brown 1, swc se 1-21-13w, pits.

COMPLETIONS

Barton County—Aylward Production Co. et al's Harzman 1, c w½ nw sw 33-16-11w, s of Prusa pool, top Arbuckle 3350 ft, 43 bbls 3356 ft.

Franklin County—Security O&G Co.'s Teall 1, c sw nw 11-17-17e, 3 mi s Ponoma gas pool, top Bartlesville 1202 ft, abnd 1205 ft.

Jefferson County—Sheedy et al's O'Neill 1, se sw nw 34-8-19e, sw Winchester, top Mississippi 1750 ft, top Hunton 2170 ft, top Viola

2385 ft, top Wilcox 2555 ft, top Arbuckle 2645 ft, abnd 2685 ft.

McPherson County — Westgate-Greenland's McCulle 1, cel ne sw 29-17-1w, 3 mi s Roxbury pool, top Viola 3133 ft, abnd 3200 ft.

Woodson County—Billerman et al's Rauscher 1, csl n½ nw 1-25-13e, 2 mi ne Quincy pool, top Mississippi 1594 ft, abnd 1634 ft.

KENTUCKY

FIRST REPORTS

Daviess County—Porter Evans' S. R. Ewing 1, 5800 ft from north line and 1700 ft from west line, sec 5-P-29, set 10-inch to 115 ft, dr 1380 ft.

Henderson County—J. L. Kennard et al's Marble City 1, 2105 ft from north line and 4620 ft from east line, sec 10-Q-24, set 10-inch to 110 ft, dr 150 ft.

Ohio County—Frazier & Lilly's Davis 1, 3500 ft from north line and 2150 ft from west line, sec 3-K-33, set 8-inch to 737 ft, top Golconda 1055 ft, dr 1075 ft.

COMPLETIONS

Butler County—South Penn Oil Co.'s E. R. McPherson 1, 450 ft from west line and 140 ft from south line, sec 13-H-32, abnd 879 ft.

Daviess County—Hart & Hart's Mrs. May Haywood 1, 1200 ft from north line and 950 ft from west line, sec 4-Q-31, abnd 1175 ft.

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SOUTH LOUISIANA

FIRST REPORTS

Allen Parish—Housh & Thompson's Industrial 1, Mittie area, 466 ft n, 466 ft e of swc 1-4s-5w, mim.

COMPLETIONS

Lafourche Parish — Gulf's Grandison 2, Grandison prospect, 21-20s-23e, abnd 12,200 ft.

NORTH LOUISIANA

FIRST REPORTS

De Soto Parish—Joe P. Dixson et al, E. N. Walker 1, sw ne 20-11n-13w, materials.

MICHIGAN

FIRST REPORTS

Cass County—Gerritsen & Williams' Beebe 1, se sw ne 5-8s-16w, rig.

Van Buren County—A. G. Hinz's Bray 1, se ne se 25-2s-18w, lcn.

COMPLETIONS

Allegan County—Leonard Blood's Knok 1, nw se nw 4-2n-16w, Traverse 1314 ft, abnd 1360 ft.

Kent County—Century Oil Co.'s Golf Club 1, ne ne nw 1-7n-12w, Traverse 2068 ft, abnd 2115 ft.

Muskegon County—Lentz & Millers' Guerne 1, nw nw nw 25-10n-15w, abnd 770 ft.

Ottawa County—Columbia Oil Co.'s Triick 1, ne nw ne 31-9n-13w, Traverse 2055 ft, Dundee 2383 ft, Monroe 2424 ft, abnd 2515 ft.

Van Buren County—Burre Oil Co.'s Alstyne 1, se ne nw 4-2s-13w, Traverse 1329 ft, abnd 1401 ft. Union Oil Co.'s McNulty 1, ne nw se 15-3s-13w, Traverse 1264 ft, abnd 1496 ft.

MISSOURI

FIRST REPORTS

Schuyler County—Rogers et al's Seamster 1, c n½ sw se 6-64n-13w, dr.

MONTANA

FIRST REPORTS

Fergus County—E & M Oil & Gas Co.'s 2, e se se 4-22n-18e, Winnifred area, spd 30 ft.

COMPLETIONS

Teton County—Tarrant-Kirk's Hoeschen 1, cne se 34-27n-5w, West Pondera area, 1,300,000 cu. ft of gas 1900 ft, 2298 ft showed for 6 bbls oil.

NEW MEXICO

FIRST REPORTS

Chaves County—Helm & Martin's Stephens 1, c nw ne 22-15s-29e, machine. Sam Sanders et al's A. N. Etz 1, c nw nw 25-15s-30e, mim.

Eddy County—Thomas-Bowers et al's H. W. Etz, Jr. 1, sw sw nw 13-16s-30e, cellar and pits.

OKLAHOMA

FIRST REPORTS

Pottawatomie County—Harper et al's Robinett 1, se ne nw 2-9n-4e, lcn.

Stephens County—Johnson's Baker 1, c se nw 35-2s-6w, dr.

COMPLETIONS

Cleveland County—Nels-Burton's Boggs 1, nec se 16-9n-2w, 2 mi ne Norman, top Simpson Dense 7320 ft, perf 90 shots 7333-75 ft, acidized 15,000 gals, shot 25 qts 7440-66 ft, co 7475 ft, pumped 56 bbls 37.2 gr.

Cotton County—Scarborough et al's Ash 1, nec se 7-4s-10w, 3 mi sw Temple, abnd 1365 ft.

Grady County—Alma Oil Co.'s Pettitt 5, sec 11-4n-8w, new oil pool in Chickasha gas area, td 3366 ft, perf 69 shots 3249-64 ft, 60 bbls 26.5 gr. Sinclair Prairie's Charleston 4, ne ne se 27-5n-8w, new gas horizon in Chickasha gas area, owdd, top sand 3918 ft, td 3968 ft, 72,000,000 cu ft gas, 1875 rp.

Lincoln County—Summitt Drilling Co. et al's Percival 1, sec 24-12n-3e, near Meeker pool, top first Wilcox 5475 ft, abnd 5504 ft.

OHIO

COMPLETIONS

Lake County—Cushing & Dempsey's S. J. Monch 1, Section 12, Clinton 3103 to 3175 ft, abnd 3246 ft.

EAST TEXAS

FIRST REPORTS

Houston County—Dupree et al's Murray 1, 850 ft sw along nw line of D. McLean sur from intersection of sw line of J. L. Riviere sur and 1800 ft se at right angles, but in D. McLean sur, 3 mi s of Navarro Crossing, sp and sd.

Limestone County—J. J. Tyrell et al's A. G. Easterling 1, 350 ft from nw cor of 137½-ac tract, J. L. Chavert sur, 11 mi e Groesbeck, rur.

COMPLETIONS

Red River County—Dave J. Flesh and S. Hootkins' K. M. Bailey 1, 1000 ft from n and 300 ft from e lines of 173.33-ac tract, John Robbins sur, elev 446 ft, top Woodbine series 909 ft, top Georgetown lime 1330 ft, top Paluxy 1777 ft, first anhydrite 2623-2710 ft, top Paleozoic 3375-77 ft, abnd in quartzite.

Rusk County—Marietta Corp.'s E. V. Alford 1, 130 ft from n and 530 ft from w lines of Thos. Howeth sur, elev 442 ft, Pecan chalk 2224-2532 ft, abnd 2817 ft.

NORTH TEXAS

FIRST REPORTS

Cooke County—Big Indian Oil & Dev. Co.'s M. P. Morton 1, 783 ft from m s s line and 1185 ft from m w w line of E. T. Ry. sec 1, A-365, 6 mi s by e of Gainesville, cem sur pipe.

Foard County—Foster Pet. Corp.'s E. M. Gamble 1, nw nw sw H&TC sec 314, blk A, 1½ mi n and 5 mi e Crowell, lcn for 4500-ft test.

COMPLETIONS

Archer County—Shappell Oil Co.'s C. E. Carter 4, 150 ft from n and 325 ft from w lines sec 37, blk 5, Clark-Plumb sur, abnd in sand 912-15 ft, carrying show oil with water. Shell Oil Co.'s E. Colgan 1, 1100 ft out of southeast cor J. F. Martin sur, A-276, Gunsight lime 1446-48 ft, sand 1453-63 ft, pumped 133 bbls initial.

Clay County—Hughes & Gerard's Ramsey-Slayback 1, 150 ft n and 150 ft w of south corner blk 31, Bacon sub-div, abnd 202 ft.

Cooke County—FHE Oil Co.-Kimbell's J. W. Hess 1, 150 ft out of nec blk 9, Thos. Scott sur A-900, abnd 1157 ft.

Grayson County—W. J. Rutledge & Jas. O'Connor Drl. Co.'s M. Williams 1, 1100 ft from n and 1450 ft from e lines of Sol Nox sur A-908, 3 mi ne Van Alstyne, abnd 5310 ft.

Wichita County—W. J. Dubose et al's Frios 1, 150 ft from n and 1470 ft fr w lines sec 15, Tarrant C.S.L. sur A-282, abnd 708 ft.

Wise County—C. A. Johnston et al's J. C. Vance 1, 1320 ft w and 380 ft s of swc T&P sec 35, both in T&P sec 37, trace gas 627-35 ft, abnd in shale 1401 ft.

WEST TEXAS

FIRST REPORTS

Crockett County—Commercial O&G Synd.'s O. W. Parker 1, 5000 ft from e and 800 ft from n lines I&GN sec 83, blk 1, mim.

Ector County—Landreth Prod. Corp.-Shell Oil Co.'s J. L. Johnson 1-A, se se nw T&P sec 43, blk 43, T-1-S, rur.

COMPLETIONS

Brewster County—H. D. Wilcox et al's W. H. Kokernot 2, 1200 ft from e and 1800 ft from n lines sec 23, blk C, J. V. Massey sur, elev 3962 ft, trace oil 775-85 ft, abnd in shale 1610 ft.

Crosby County — Gulf Oil Corp.'s E. P. Swenson 1-C, c nw H&GN sec 95, blk 2, elev 2475 ft, top anhydrite 340 ft, top Yates 750 ft, top brown lime 1640 ft, top Ellenberger lime 8307 ft, abnd in sul w 8414 ft.

Jones County—S. B. Roberts Co. et al's G. I. Jeffreys 1, nw se ne T&P sec 7, blk 15, jkd and abnd 1505 ft, skid rig.

SOUTH TEXAS

FIRST REPORTS

Cameron County—Sal Vieja Oil Co. and Pure Oil Co.'s Newberry 3, San Martin Grant, 7 mi sw Port Isabel, lcn.

Duval County—Dulup Oil Co.'s Gruy 1, 330 ft n line, se ne sur 391, lcn.

Karnes County—Gar Oil Co.'s Barnett 1, Alex Hunter sur, 5 mi ne Karnes City, lcn.

Live Oak County—Amory Oil Corp.'s Moczygemba 1, lot 122, blk "A," George W. West subd, S. M. Williams sur No. 113, 7 mi sw George West, lcn. G. A. Clements' Clements Estate 1, Elizabeth Jardin sur, 4 mi s Whitsett, lcn.

Milam County—Charlie Schedel's Henniger 1, 150 ft s line, 400 ft nw Cloud's Henninger 1, 63-ac tr, S. C. Robinson sur, lcn.

Starr County—Moss, Owen & Bishop's Staley 1, 150 ft n line, 660 ft e line of sh 76, porc 79, 14 mi n of Rio Grande, lcn. Clopton & Clopton's Green & Manning 1, 375 ft. n line, 225 ft w line of blk 7, sh 85, porc 81, drlg 45 ft. T. E. Stephens' Ernesto Zamora Heirs 2, 150 ft s line, 150 ft e line, lot 11, Stevens subd. of share 67, porc 72, Mier Jurisdiction, sand with oil odor 460 ft, testing below 460 ft.

Williamson County—Jackson et al's Bland Estate 1, 1540 ft ne line, 7450 ft sw line of Parthinia Coursey sur, 2 mi se Taylor, dr 426 ft.

SOUTHWEST TEXAS

COMPLETIONS

DeWitt County—Marshall Purvis et al's B. Afflerbach et al 2, 980 ft due w nw cor A.

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SHREVEPORT, LOUISIANA

Kozak, tr, but in Afflerbach 287-ac tr, I. V. Criscell sur, 44, abnd 7671 ft.

Duval County — Magnolia Petroleum Co.'s Duval County Ranch 2 (902), 2310 ft n line, 2310 ft w line of sur 902, ½ mi nw Lopez field, abnd 2966 ft.

Jackson County—Moore & Ahern and Cron & Gracey's Clement 1, 330 ft n line, 330 ft w line of blk 18, Clement subd, S. F. Austin sur, ab-5, 1 mi se discovery, abnd 6258 ft.

Jim Wells County — Dan Auld and Arch Lowrance's Temple 1, 330 ft s line, 330 ft e line of lot 28, Hancock, Loving and Roby subd, Los Presenos de Arriba gr, 5 mi ne Alice, abnd 5715 ft.

McMullen County—William H. Spice and Loma Oil Co.'s Edrington Est. 3, 557 ft from w line and 910 ft from n line of AB&M sur 57, top Jackson 1868 ft, top Cole 1898 ft, top Chernoskey 2275 ft, top Government Wells 2630 ft, top Loma Novia 2750 ft, top Mirando 2920 ft, top Pettus 3078 ft, abnd 3082 ft. R. M. Thornton's Henry 1, 150 ft e line, 1900 varas s line of 1312-ac tr, N. Wright sur No. 13, abnd 764 ft.

TEXAS GULF COAST

COMPLETIONS

Chambers County—J. R. Turnbull's ¾ mi nw of Cotton Lake field, Chambers County School Land sur, comp 218 bbls 34 gravity oil daily, ¼-in choke, 6439 ft.

Harris County—Dick Schwab & Carlton's Gordon 1, Satsuma area, 450 ft n and e fr swc of M. Wood sur, abnd 6740 ft. Wilhite et al's Harris County Navigation District 1, Houston Ship Channel area, 250 ft w of Holland ave and 950 ft n of railroad, E. Thomas sur, abnd 5160 ft.

Federal taxes off during October

Federal tax collections from gasoline, lubricating oils and pipe-line transportation in October fell sharply from September levels and were markedly below receipts in October, 1938, it was disclosed November 22 in the monthly report of the Bureau of Internal Revenue.

Gasoline tax collections for the month, the bureau announced, were $16,358,880 against $25,496,458 in September and $18,423,802 in October, 1938, while receipts from lubricating oils were $2,291,291 against $3,143,356 in the preceding month and $2,351,453 a year ago, and pipe-line transportation revenues were $731,207 against $1,038,940 in September and $1,002,685 in October of last year.

For the first 10 months of the current year, gasoline tax collections were well ahead of the corresponding 1938 period but both lubricating oil and pipe-line taxes showed a loss, it was reported.

Revenues from the gasoline tax aggregated $179,790,875 against $165,138,085 last year, but lubricating oils paid only $24,542,786 compared with $25,915,946, and pipe-line transportation $9,181,162 compared with $9,646,573.

Buttram to speak at West Texas Association meeting

Frank Buttram, Oklahoma City, president of the Independent Petroleum Association of America, will be the feature speaker at the eighth annual meeting of the West-Central Texas Oil & Gas Association December 11 at the Baker Hotel in Mineral Wells, according to an announcement by A. J. Frazier of Abilene, president of the regional petroleum association.

Judge J. C. Hunter, Abilene, immediate past president of the West-Central Texas Oil & Gas Association who is serving as president of the General Mid-Continent Oil & Gas Association, will also be on the banquet program, a stag affair.

J. D. Sandefer, Jr., Breckenridge, first president of the West-Central Texas Oil & Gas Association, has been named to act as master of ceremonies at the banquet.

An open forum meeting, to which all oil operators, producers and business and professional people who are interested in the future of the petroleum industry in this part of the country are invited, will be held during the afternoon as another one of the features of the annual meeting. This session will be devoted strictly to discussions of problems that are of immediate and direct concern to the industry. Such items as local, state and federal taxation, state and federal regulations, wage and hour rules, compensation and the importance of the oil industry and its operations to the public generally will be among the subjects to be discussed. Harold G. Neely, Fort Worth, will be chairman of this meeting.

A business session of the directors of the organization will be held at noon, according to the program that has been announced by President Frazier.

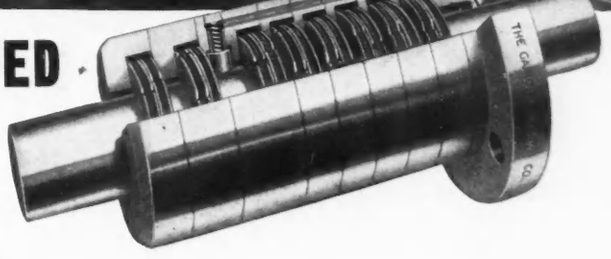
Members of the senate and house of representatives of the state of Texas and of the Texas Railroad Commission will be invited to attend the Mineral Wells meeting. The meeting will be open to the public generally.

Frazier urged that all who plan to attend the meeting make reservations for banquet tickets by writing the association's headquarters in Abilene immediately. The tickets are $1.50 each.

GARLOCK 875

GAS COMPRESSOR METAL PACKING

IMPROVED —for Long Service



The improved, non-abrasive iron which we now use in making GARLOCK 875 Metal Packing offers great resistance to wear. Frequent periodic tests guarantee the uniformity of this quality controlled iron. GARLOCK 875 gives long, dependable service on high or low stage gas compressors.

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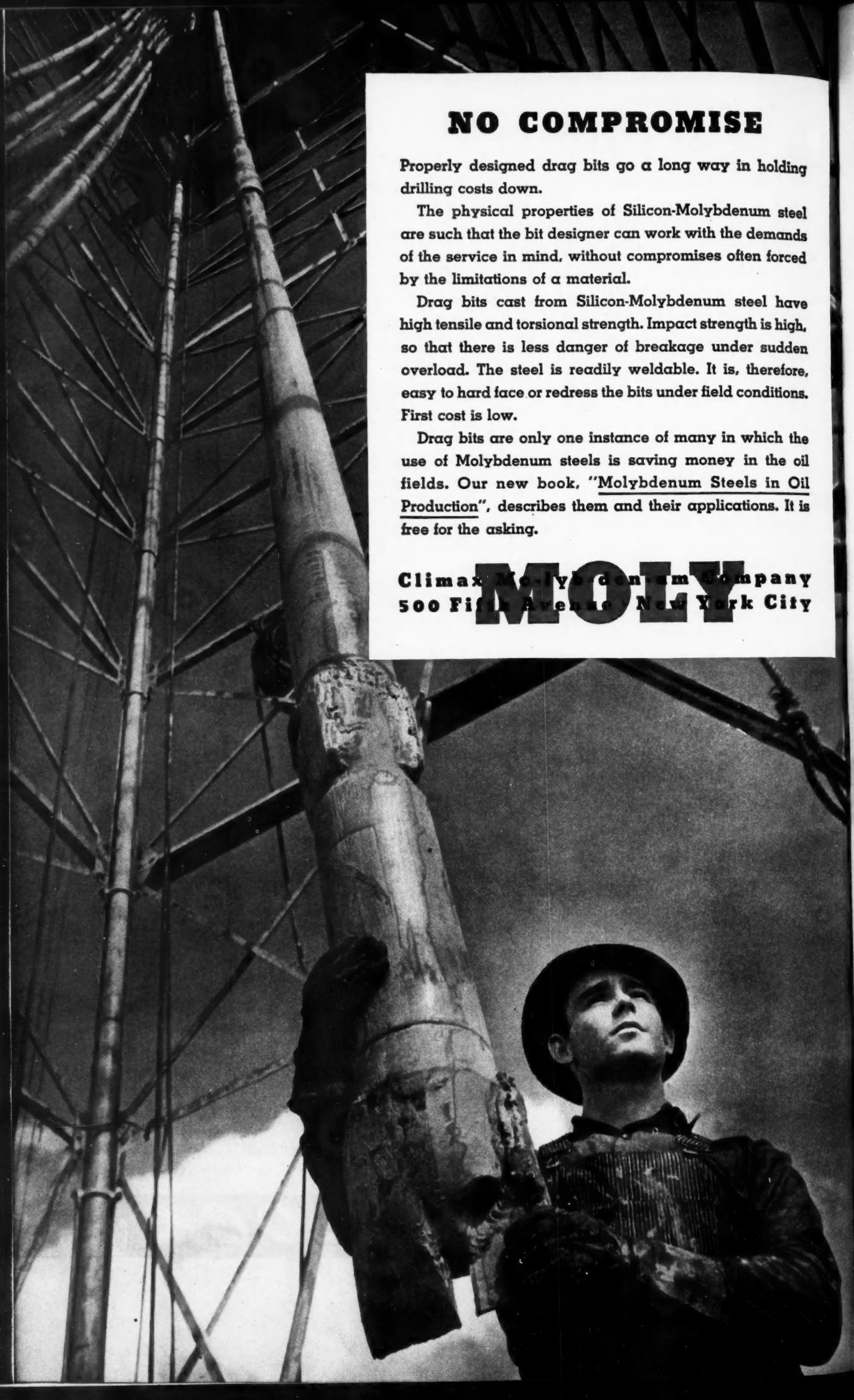

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Drag bits are only one instance of many in which the use of Molybdenum steels is saving money in the oil fields. Our new book, "Molybdenum Steels in Oil Production", describes them and their applications. It is free for the asking.

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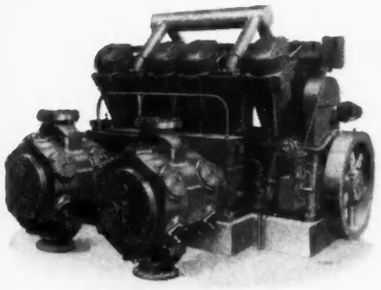
MOLY

NOTES FOR THE Equipment Buyer and User

Gas-Engine Compressor
INGERSOLL-RAND COMPANY

Ingersoll-Rand Company, 11 Broadway, New York, announces a new heavy-duty, gas-powered compressor known as the "LVG." Designed to fill the growing need for large compact, 4-cycle units, the LVG is built in 485 and 650 horsepower sizes using 6 or 8 V-type power cylinders. By using only two compressor frames on either size, the inlet, discharge and inter-stage piping and manifolding are simplified, and only two stuffing boxes are required.



The new Ingersoll-Rand Gas-Powered Compressor Type "LVG."

The LVG incorporates overhead valves and removable wet-type liners in the power cylinders. All auxiliaries, including the camshaft, the built-in recirculating water pump and auxiliary power take-off are driven from the flywheel end of the shaft, a feature promoting good governing and smooth operation.

The manufacturer supplies LVG compressors with suitable cylinders for pressures up to 5000 pounds and for vacuum service.

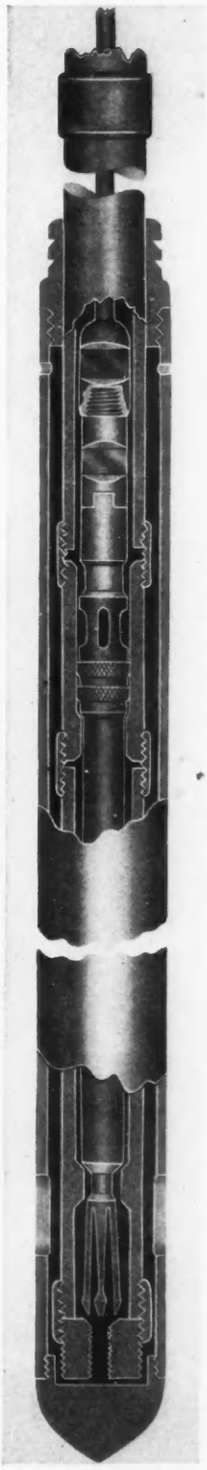
Ingersoll-Rand further announces that the V-type cylinder power end of these units is available as a straight gas engine, known as the PLVG.

Additional information on these units is contained in bulletin 3073, copies of which may be obtained from Ingersoll-Rand Company, 11 Broadway, New York City or from branch offices.

Tubing Anchor and Liner
W. O. PATTERSON

A tubing anchor and liner designed for duty in wells making excessive amounts of gas or sand has been introduced by W. O. Patterson, 120 Southwest 24th Street, Oklahoma City, Oklahoma. The anchor is made in any desired length and in 4, 4¾, 5½ and 6⅞ inches O.D. The head is bored to take 2, 2½ or 3-inch tubing and is equipped with bull plug with insert threads for cleaning anchor.

The manufacturer asserts that use of a 5-foot spacing nipple through the head permits setting of the anchor on bottom while the tubing remains suspended, thus eliminating agitation of the tubing during pumping. This feature is also said to prevent gas lock by permitting complete submergence of the valves even though the fluid level is low. A top swinging and seating head eliminates the outer jacket and consequent cleaning jobs.

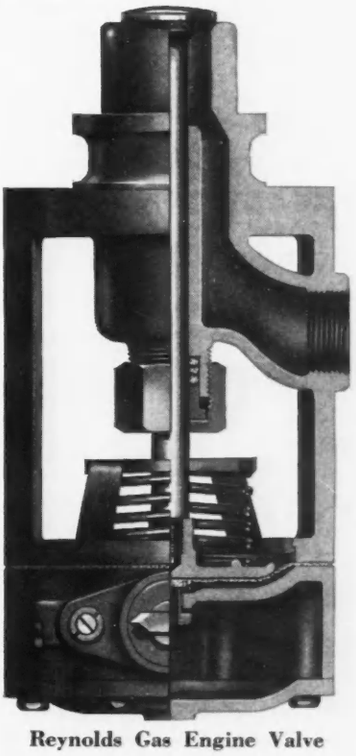


Patterson Tubing Anchor and Liner

Gas Engine Valve
REYNOLDS MANUFACTURING COMPANY

Reynolds Manufacturing Company, Dallas, Texas, announces addition of the Fuel-Miser, a valve assembly for the introduction of fuel gas through the head of two-cycle engines.

Outstanding features are the principle of operation, simplicity of design and compactness of the valve assembly. A poppet valve is the only moving part, and is actuated by pressure from the scavenger end of the power cylinder through a diaphragm.



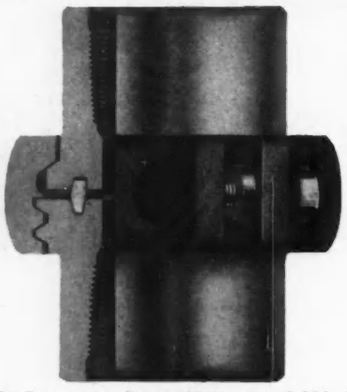
Reynolds Gas Engine Valve

Installation is made by bolting the Fuel-Miser valve assembly to the cylinder head; running the fuel pipe from the engine governor to the assembly; and running a ¼-inch pipe from the assembly to the scavenger end of the power cylinder. Drilling and tapping the cylinder head for a spark plug adapter, furnished with the valve assembly, is usually the only machine work necessary.

Asbestos Pipe Wrapping
DEARBORN CHEMICAL COMPANY

An improved asbestos wrapper for protecting underground pipe lines against physical and chemical deterioration has just been developed by Dearborn Chemical Company, 310 S. Michigan Avenue, Chicago. This product, No-Ox-Idized Reinforced Asbestos Wrapper, has a heavy layer of impregnated asbestos and is reinforced with

Red-Rex
QUICK-JOINT
PIPE UNIONS



High Pressure Steel Unions — 3,000 lbs. and 6,000 lbs. test. Renewable seal ring with three tapered sides gives leak-proof joint. One straight side secures seal ring in one hub. Scientifically designed threads allow for contraction and expansion; equalize pressure at all points; line up off-center hubs.

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Here's how you can eliminate piston rod breakage on your slush pumps—standardize on MacClatchie Wearevers!

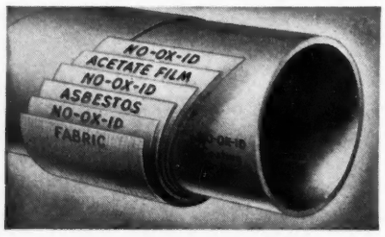
These rods are *guaranteed*, fully and completely, against breakage while in use on your pumps. *Any pumps damaged through breakage of a Wearever Piston Rod equipped with MacClatchie Wearever Pistons will be repaired free of charge, and, in addition, a new rod will be given for the one broken!* That's *your* guarantee of better performance from MacClatchie equipment!

MacClatchie Wearever Piston Rods are made of the finest selected ball race steel, hardened and ground to a mirror finish. They are available in a wide range of sizes and tapers for all pumps. We strongly recommend the MacClatchie Special Taper Rod, which has just the right amount of taper to hold the piston under the highest pressure, yet sufficient contact surface to prevent it from pushing into the piston body.

Write for Full Details

MacCLATCHIE MANUFACTURING CO.
COMPTON, CALIFORNIA
Mid-Continent Distributor, HAKE TOOL COMPANY, Houston, Texas
Rocky Mountain Representative, E. C. DILGARDE, Casper, Wyoming
Foreign, GEORGE R. WOODS, 17 Battery Place, New York, N. Y.

NOTES FOR THE Equipment Buyer and User



"No-Ox-Id" Pipe Wrapping

light fabric and a layer of acetate membrane. These laminations improve density and mechanical strength and provide a high resistance to moisture penetration. Weight of the wrapper has not been appreciably increased. The wrapper can be applied either by hand or machine. It is intended to be used with coating material, but where no surface layer of coating is desired the wrapper can be reversed to expose the impermeable acetate membrane.

Well Weight and Torque Calculator

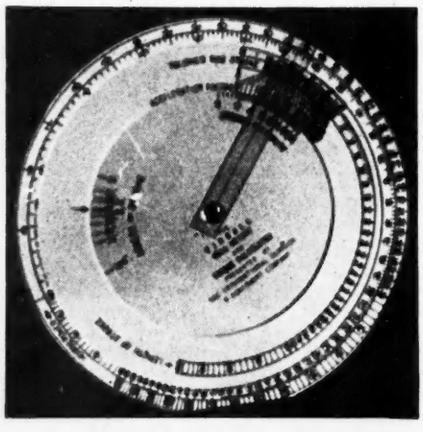
INTERNATIONAL DERRICK & EQUIPMENT COMPANY

International Derrick & Equipment Company is distributing a well weight and torque calculator designed by John A. Tidball, Mid-Continent engineer for its geared pumper department. The device will fill a long-felt need for a calculator to take the place of books of tables and lengthy mathematical calculations in determining polished rod loads and the torque and horsepower required to pump a given well.

One side of the device is arranged with fluid-weight columns for any depth of well and for all the usual working barrel diameters; a sliding dial with the weights of various size rods enables the operator to quickly determine the total weight of rods and fluid in his well.

The reverse side is arranged with three dials, with settings for length of stroke and number of strokes per minute, resulting in an acceleration factor. Operating much like an engineer's slide rule, another setting is made which arrives at the peak torque on one scale and the horsepower on another scale. The calculator actually works the formula with accuracy, and without the use of tables or pencil and paper. Complete printed instructions are furnished.

The calculator may be had without cost from IDECO offices and warehouses.



Well Weight and Torque Calculator

Sucker-Rod Coupling

THE DIA-LOY COMPANY

The Dia-Loy Company, 101 North Alameda Avenue, Burbank, California, announces a sucker-rod coupling designed to combat abrasive and corrosion problems found in sandy, crooked and sour pumping wells. It is to be applied on a string of rods in the same manner as the conventional rod couplings.

Dia-Loy Rod Coupling

The coupling is of standard A. P. I. construction, in two types. Type A has a body made of heat-treated steel with tensil strength sufficient to carry the heaviest well loads, and Type B has a body of non-ferrous alloy of high tensil strength and toughness also capable of carrying heavy loads. To the body of each of these types a hardened ring of special alloy is combined under a process for which a patent has been applied. This ring is of a large cross section in thickness and is the same uniform hardness throughout. It will retain its physical properties under heat ranges up to 1800 degrees.

Aftercoolers

Pennsylvania Pump and Compressor, Easton, Pennsylvania, has released an illustrated brochure on aftercoolers for removing from compressed air and gas the entrained moisture and oil. Specifications and graphs are included with the descriptive material.

NOTES FOR THE Equipment Buyer and User

C. S. Finegan Joins J. B. Beaird Corporation

C. S. Finegan has been appointed Assistant General Manager of the J. B. Beaird Corporation, Shreveport, Louisiana. Finegan comes to the Beaird organization from the sales managership of Ingalls Iron Works, Birmingham, Alabama. He is a graduate in engineering from the University of Alabama, with much experience in steel forming and fabrication.

C. S. FINEGAN

General Electric Gets Atlantic Tanker Power Order

The General Electric Company has been awarded the contract for the propelling machinery for a 19,405-ton, all-welded, turbo-electric tanker to be built for The Atlantic Refining Company by Sun Shipbuilding and Dry Dock Company at its Chester, Pa., yards. Capacity will be the equivalent of 6,552,000 gallons. The contract includes both the turbines and the electric drive.

The vessel's turbo-electric engines will be designed to develop 5,000 horsepower, giving her a speed of 13.25 knots. Scheduled for delivery late in 1940, the addition of the new tanker to the Atlantic fleet will give the company the world's four largest welded ships. The new vessel's three immediate predecessors, all of the same general type of construction, have all been added to the Atlantic fleet since February, 1938.

Hunt Granted License to Make Straight Hole Bit

Oil Well Engineering Corporation, Houston, announces granting a license to Hunt Tool Company to manufacture and handle on a royalty basis the OWECO straight hole drilling bit, designed and introduced to the field early in 1938 to straighten crooked holes. Oil Well Engineering Corporation will continue to manufacture and rent the bit as in the past.

Caterpillar Makes Wallace Western Sales Manager

Caterpillar Tractor Company has announced the appointment of V. H. (Vic) Wallace as Western sales manager, to succeed the late H. H. Chambers. Wallace will headquarter in San Leandro, California.

In 1927 Wallace became affiliated with "Caterpillar's" advertising department at San Leandro. He was almost immediately sent to Peoria, Illinois, as assistant advertising manager at that office. He was there for 5½ years, and in January, 1933, was transferred to the Western sales division as district representative. In that capacity, he headquartered briefly in Los Angeles, and then worked out of San Leandro, taking the territory as far north as Vancouver, B. C. In 1935, he was appointed agri-

V. H. (VIC) WALLACE

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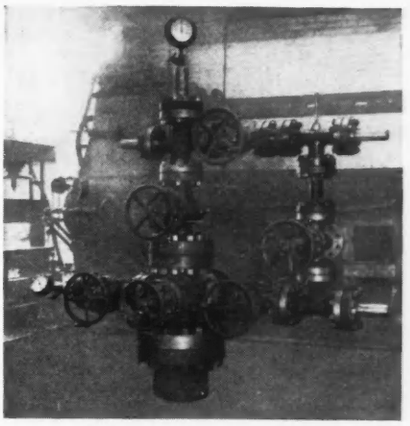


Brewster By-Pass Well Assembly

Tested 10,000 pounds. All steel, all flanged and pre-tested, this newest of Brewster assemblies embodies a by-pass control head of exclusive Brewster design. The two valves on the by-pass head completely control all casing pressure. Two gate valves are done away with. The whole assembly is more compact and has fewer connections. Write for prices.

The BREWSTER CO., Inc.
Phone 2-3181 **Shreveport, La.**
New Iberia - Houma - Lake Charles - Rodessa Bunkie

Since 1912, this familiar Trade Mark has assured pumpers of greater performance because of more stamina in the cup.

It's How Little they Cost On the Job that Counts . . .

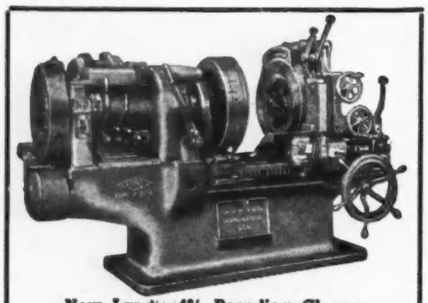
It's not what you pay over the counter but how long a cup performs that determines its real value. One that runs twice as long is worth *more than double* because of the delays it prevents.

Dragon Valve and Pump Cups — "tailor-made" of toughest materials, processed by our secret formulas, to meet most gruelling tests — assure *that* longer run that makes them COST you less.

Specify them — *by name* — every time — at your favorite supply store.

THE DRAGON MFG. CO.
Marietta - - - - - Ohio

The World's Standard In Deep Well Cups.



New Landis 4¾ Receding Chaser Pipe Threading Machine

COMPLETE LINES

Machine Tools—Metal Working Machinery—Bolt and Pipe Threading Machines—Electric Arc Spot and Butt Welders—Hand Power and Electric Traveling Cranes—Foundry and Forge Shop Equipment.

D. S. MAIR
MACHINERY CORPORATION

HOUSTON
4000 Clay
Stanley Mair
Fx. 1466

DALLAS
322 Allen Bldg.
Chas. Harter
7-2874

REGISTERED PROFESSIONAL ENGINEERS

Air · Gas · Water
REPRESSURING
RECYCLING • PRESSURE MAINTENANCE
INSTALLATION • OPERATION

PETROLEUM ENGINEER
JO H CABLE
WICHITA FALLS TEXAS

GAS MEASUREMENT • PERMEABILITY
COMPRESSOR PLANTS • POROSITY
BOTTOM HOLE PRESSURE • SATURATION
GAS OIL RATIOS • RECOVERABLE OIL
CONTROL OF FLOW THRU FORMATION

REGISTERED PROFESSIONAL ENGINEERS

Standco
NO-SMOKE
STANDCO BRAKE LINING

Is the driller's best friend because it makes the easiest brake known and "feeds off" evenly while drilling. It never scores brake rims. See Page 2100 Composite Catalog.

Standco Brake Lining Co.
HOUSTON

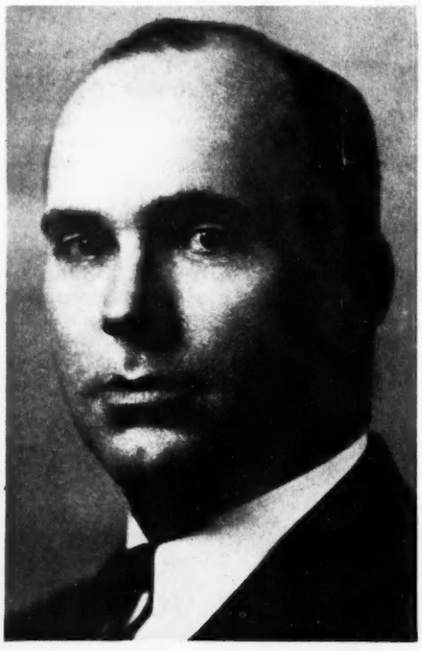
NOTES FOR THE Equipment Buyer and User

cultural sales manager of the Western division. He continued in that capacity until November, 1938, when he was transferred to San Leandro, to act as assistant sales manager, which position he held until the time of his latest appointment.

The National Supply Company Announces Personnel Changes

C. C. Cartwright, vice president of The National Supply Company's interest in the Texas, New Mexico and Louisiana area with headquarters at Fort Worth, will retire from active service on January 1.

Cartwright has a record of 37 consecutive years with the organization, and although retiring from active duty he will continue his affiliation in an advisory capacity.



D. F. PAYTE
Promoted to District Sales Manager in the Mid-Continent for The National Supply Company.

R. W. GORDON
Becomes Texas Manager for the National Supply Company.

R. W. Gordon, division sales manager of National's Mid-Continent organization at Tulsa, moves to Fort Worth early in December to assume the duties of manager of the Texas Division.

D. F. Payte, assistant division sales manager at Tulsa, will assume the duties of division sales manager in the Mid-Continent area following Gordon's transfer to Fort Worth.

Bucyrus-Erie Appoints J. F. Tait Pittsburgh Sales District Manager

Bucyrus-Erie Company announces appointment of J. F. Tait as district manager of the Pittsburgh sales district, with offices at 1502 Clark Building, Pittsburgh. Tait has been associated with the company 22 years and prior to this appointment was in charge of the Philadelphia office, serving there as an assistant manager for the Eastern sales district.

Air-Line Anti-Freeze

Sullivan Machinery Company, Michigan City, Indiana, announces Bulletin R-16, describing Anti-Freeze systems for air lines, as follows:

"Tannergas" for temporary air compressor installations or where electric current is not available; "Frosto" for permanent installations where electric current can be obtained; and the newly developed "Frosto" Vaporizer for Port-

Core Analysis

Core Laboratories, Inc., Dallas, Texas, have prepared a mailpiece describing its service and the function of core analysis. Included is a price list for field service.

Let North Winds Blow, I Won't Freeze!

The OTIS REMOVABLE BOTTOM HOLE REGULATOR safely keeps pressures down where they belong, thus positively eliminating freezing at surface controls without using surface heaters.

WRITE OTIS TODAY
PRESSURE CONTROL
INCORPORATED
DALLAS, TEXAS

NOTES FOR THE Equipment Buyer and User

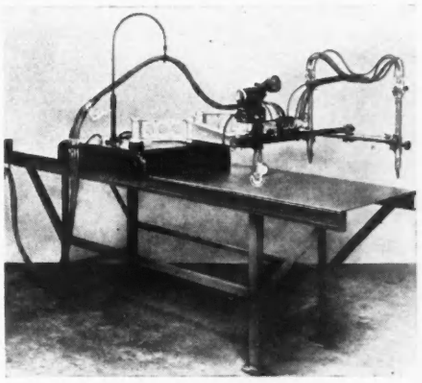
New Airco Gas Cutter Has Wide Flexibility

The extreme flexibility of use of the new Airco No. 10 Planograph announced by Air Reduction Sales Company, New York, is demonstrated by its ability to gas cut straight lines, rectangles, circles and irregular shapes from ferrous metal of any thickness within the present practical limits of the cutting torch. Although a stationary-type machine, the new unit can readily be moved by crane to different localities in the shop.

The No. 10 Planograph consists of a tracing table upon which the carriage travels. The torches and tracing devices are supported on the carriage. Operating on either 110 or 220 volts a.c. or d.c., the unit requires a minimum of floor space. Even including the work table, the new planograph requires a working area of only 5½x10½ feet.

Cutting range in single torch operation is 24 inches wide by 72 inches long. This length can be increased indefinitely in multiples of 72 inches by utilizing additional tracing tables. Maximum diameter of circle cuts is 24 inches. When two torches, mounted on the regular operating bar, are employed for simultaneous cutting, the cutting area for each torch is 12 inches wide by 72 inches long. Two circles each up to 12 inches diameter can also be cut with the torches mounted in this manner. By using an auxiliary bar, the cutting area of each is 24x24 inches.

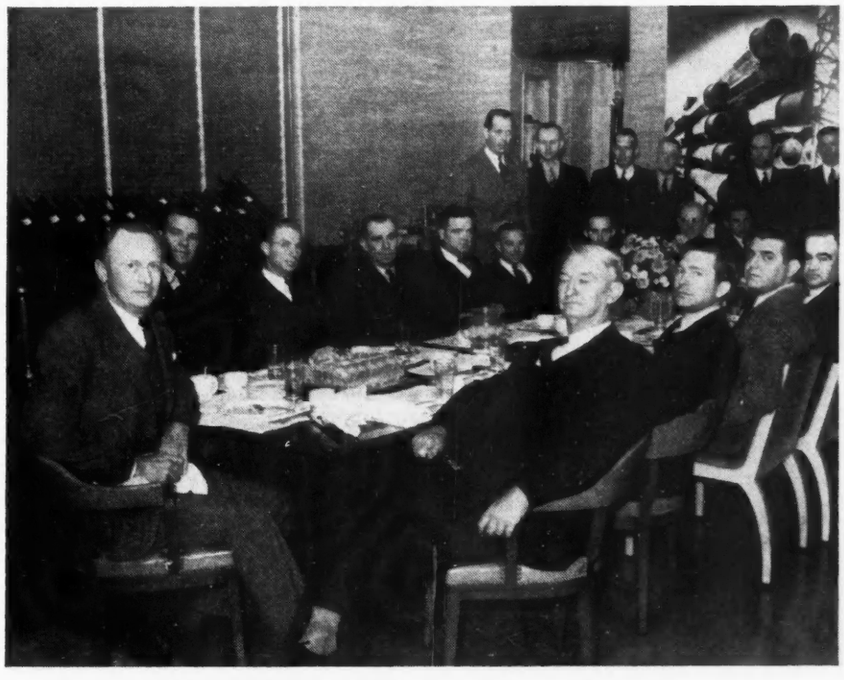
The tracing device for manual tracing



Airco No. 10 Planograph

can be locked so that it will, without manual guiding, travel in a straight line in any desired direction. This time-saving feature is particularly convenient when cutting any irregular shapes which involve straight-line cutting. The devices for magnetic and templet tracing can be quickly interchanged in the existing head. The magnetic tracer, connecting directly to an electrical outlet conveniently located near the top of the tracing device head, requires 110-volt direct current for operation.

Provision is also made at the tracing device head for connecting a lamp to light the work table. A switch for forward and reverse motion, and the magnet switch, are also conveniently located at this point. The speed of the motor is governed by a



EMPLOYEES HONOR R. G. HAMAKER

A surprise birthday dinner was given R. G. Hamaker, vice president and sales manager of Reed Roller Bit Company, recently in the sales conference room at the Reed plant, Houston. Present at the party were H. E. Estes, Jack Knight, L. T. Anderson, Harvey Ledlow, Harry Heller, Charlie Fontaine, Beverly Page, K. W. Michael, E. H. Becker, J. C. Stokes, F. C. Gignoux, George Schunior, H. C. Tooley, Harper Black, G. G. Harrington, Lubin Borne, H. M. Conway, John Butler, and Earl Rives.

*STRIPPER WELLITIS

It's easy to cure Stripper Wellitis, with its consequent headaches for farm bosses and wear and tear on pulling equipment. Install an O'Bannon Baby Red Pump.

Here is the actual experience of one company in the McCamey, Texas, field. Well was being pumped with common barrel and cup traveling valve, and when first hung on, would make five barrels a day. Production would gradually fall off, and well would be pulled every three weeks to recup valve.

In June, 1939, an O'Bannon Baby Red was installed. Production first day and every day since then has been five barrels. Well has not been pulled since June installation. Customer has subsequently run twenty more Baby Reds.

The Baby Red was designed for and is ideally suited to stripper wells. Study this pump on page 24 of your new O'Bannon Catalog Number Nine. Then install one and prepare to take a rest cure from your Stripper Wellitis.

*** A disease commonly associated with old wells. Symptoms include pounding down, pumping off, frequent rod jobs, lost production, unbalanced powers, etc. Caused by overloading; specifically, by using too large a pump.**

SOLD BY SUPPLY STORES

Manufactured by

WALTER O'BANNON COMPANY

BABY RED Tulsa Fort Worth

O'BANNON

BABY RED PUMPS

graduated disc known as the Index Speed Control. This disc provides a complete range of motor speed in one full turn of 360°. The cutting speed in inches per minute is registered on the reversible tachometer.

The gas control unit on the No. 10 Planograph is centrally located. A knob handle operates cams, progressively arranged, one each for the pilot light, acetylene (or other fuel gas), oxygen preheat and cutting oxygen. One complete cycle lights and cuts off in proper sequence. Handwheels mounted on either end of this unit permit lighting or extinguishing the torch from either end of the tracing bar. For further information concerning the new Airco No. 10 Planograph, write Air Reduction Sales Company, 60 East 42nd Street, New York, N. Y.

Three New Booklets Give A.P.I. Pipe-Standards Data

Supplements to two American Petroleum Institute pipe standards and an information bulletin on collapsing pressures and setting depths for casing have been published by the Institute's Division of Production, Dallas, Texas.

Supplement No. 6 to A.P.I. Standards No. 5-A, "Specifications for Casing, Drill Pipe and Tubing," gives complete data, including gages, for round-thread casing, tentatively adopted, and for round-thread tubing, as finally approved. Changes in coupling diameters and vanish angles, and other revisions also are included, resulting in complete revision of all sharp-thread tables and sketches for both casing and tubing.

Supplement No. 6 to A.P.I. Standards No. 5-L, "Line-Pipe Specifications," gives effect to changes and additions adopted at the 1939 Mid-Year Meeting, including revisions in coupling dimensions, vanish angle on pipe and in couplings, and corresponding changes in thread dimensions.

Bulletin 5-C-2, "Information on Collapsing Pressures and Setting Depths for Casing," gives preliminary data, not approved as a code of recommended practice, but published as informational material preliminary to the preparation of a final code. The bulletin and both supplements were prepared under direction of the Committee on Standardization of Oil-Country Tubular Goods.

A.W.S., A.S.T.M. Specifications Published in Convenient Form

The tentative specifications for iron and steel arc-welding electrodes, approved by both the American Welding Society and the American Society for Testing Materials, are offered, along with other useful material, in a 24-page catalog just issued by The McKay Company. Advice as to proper discrimination among different mild-steel electrodes, according to the nature and conditions of the work, is given in charts and comparisons that should be equally helpful to a user of either McKay Shielded-Arc Welding Electrodes or some other brand. The new catalog (E-16) may be had by writing the general sales offices of The McKay Company at York, Pa.

Single Drum Reversible Hoist

Sullivan Machinery Company, Michigan City, Indiana, has issued a new bulletin, 76-R, on its Class L-111 reversible "Pistonair" single drum hoist. This hoist is described as light and compact and equipped with large diameter drums for long rope wear, heavy duty Lubriseal ball bearings and four-cylinder reciprocating air motor. It is fully enclosed and can be furnished with either positive or friction-type clutch.

Acid-Resisting Paint

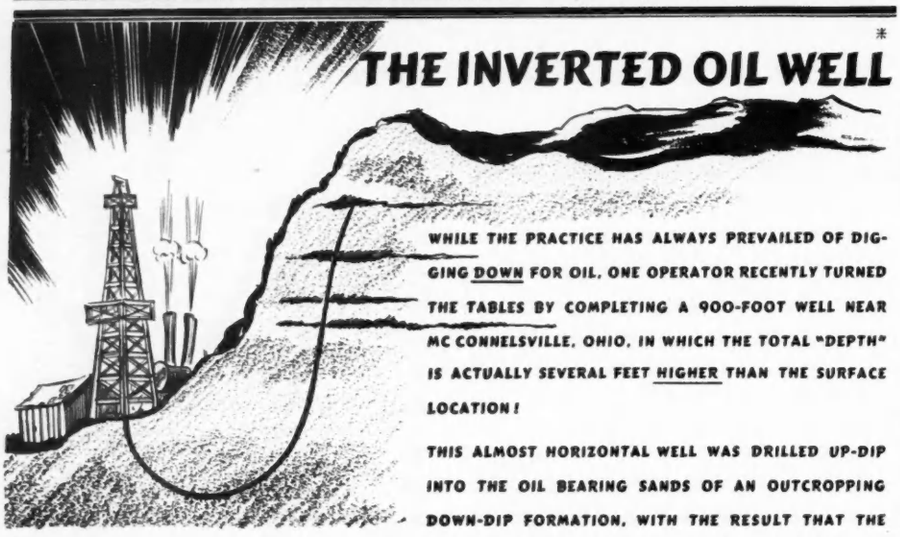
A four page catalog section on its line of Acidseal Paints, derived from rubber by a process which it developed and patented, has just been published by The B. F. Goodrich Company, Akron, Ohio, and is now available upon request.

The subject is interesting to the petroleum field because of the paints' unusual properties as protective covering for the exteriors of oil and gasoline tanks, for many types of machinery, against the action of acids, alkalies and sulphur fumes and many other uses.

Acidseal paints, according to the manufacturer, are different from any other type of paint, lacquer, or coating, with strong adhesion, corrosion resistance and elasticity or characteristics. They dry by evaporation, during which the solid material is united to metal or any other clean, dry surface with practically an inseparable bond. They have many of the elastic properties of rubber, the hard, firm film conforming to the expansion, contraction or vibration of the painted surface without cracking.

The catalog section lists all properties of the product, directions for use, each type, with its special properties, and includes an exact reproduction of the different colors in which the paints are made.

It's a Fact — Johnston



WHILE THE PRACTICE HAS ALWAYS PREVAILED OF DIGGING DOWN FOR OIL, ONE OPERATOR RECENTLY TURNED THE TABLES BY COMPLETING A 900-FOOT WELL NEAR MC CONNELSVILLE, OHIO, IN WHICH THE TOTAL "DEPTH" IS ACTUALLY SEVERAL FEET HIGHER THAN THE SURFACE LOCATION!

THIS ALMOST HORIZONTAL WELL WAS DRILLED UP-DIP INTO THE OIL BEARING SANDS OF AN OUTCROPPING DOWN-DIP FORMATION, WITH THE RESULT THAT THE BOTTOM WAS LOCATED ABOVE THE POINT WHERE THE OPERATOR SPUDDED IN. PRODUCTION INFORMATION STATES THAT THE WELL IS CURRENTLY FLOWING—DOWN HILL—AT A RATE OF ABOUT 30 BARRELS A DAY.

NO MATTER HOW UNUSUAL CONDITIONS IN YOUR WELL MAY BE, YOU CAN TEST IT SAFELY, ACCURATELY AND AT NOMINAL EXPENSE WITH A JOHNSTON FORMATION TESTER. JOHNSTON MAKES SPECIAL PACKERS AND ACCESSORIES TO MEET ALL WELL CONDITIONS. THIS IS PART OF JOHNSTON'S REGULAR SERVICE POLICY, COSTING YOU NOTHING EXTRA. BUT ASSURING THE MOST ACCURATE AND RELIABLE FORMATION FACTS ON EVERY JOHNSTON TEST!

THE JOHNSTON ENGINEERING BROCHURE 311-A GIVES ALL THE IMPORTANT FACTS ABOUT JOHNSTON TESTING METHODS AND EQUIPMENT. WRITE FOR YOUR COPY TODAY—THERE'S NO OBLIGATION!

Johnston

*Submitted by E. Washburn, Bartlesville, Oklahoma

FIVE DOLLARS ($5.00) WILL BE PAID FOR EACH INTERESTING OR UNUSUAL FACT CONCERNING THE PETROLEUM INDUSTRY (EITHER IN THE UNITED STATES OR ABROAD) WHICH IS USED IN THIS SERIES OF JOHNSTON ADVERTISEMENTS. SUBSTANTIAL PROOF MUST ACCOMPANY EACH CONTRIBUTION. WHEN TWO OR MORE SIMILAR FACTS ARE SENT IN, THE AWARD WILL BE GIVEN TO THE FIRST ONE RECEIVED ...

M. O. JOHNSTON Oil Field Service Corp.
3117 SAN FERNANDO ROAD ALbany 0186
LOS ANGELES, CALIFORNIA
Bakersfield 2794 Ventura 5621
"Servicing California and Selling Exclusively Foreign"

FORMATION AND CASING TESTING — JOHNSTON

JOHNSTON Oil Field Service Corp.
5702 NAVIGATION BLVD.
HOUSTON, TEXAS
"Servicing Mid-Continent and Gulf Coast"

"WHY SET CASING BEFORE YOU KNOW!"

Squeaks from the Bull Wheel

A Tasty Dish

My feet burn like the dickens. Do you think a mustard bath would help?"

Sure! There's nothing better than mustard for hot dogs.

In the Pink

So your daughter is about to marry. Do you really feel she is ready for the battle of life?

She should be. She's been in four engagements already.

But When

The frost is on the pumpkin and the frosting's on the cake; the gobblers eye the chopping block, the mince is ripe to bake; the kids from college hurry home to gabble and to gobble—the relatives will stuff themselves until they fairly wabble.

Aunt Joe will start the argument, she always has with Joan; and Uncle Ned will hint to Ed it's time to pay his loan; the younger married relatives will bring their offspring shining (who'll make the place a bedlam while the older ones are dining).

The ladies in their newest gowns will scrutinize each other, and thank their lucky stars they didn't marry hubby's brother! Where friendly smiles will rule, just one will wear a dirty look: 'twill be that tired bedraggled soul, ye poore Thanksgiving Cook!

Deadweight

Sonny, what's the noise upstairs?

Ma's dragging Pa's pants across the floor.

That shouldn't make so much noise.

I know, but Pa's in 'em.

Translated

"Name?" queried the immigration official.

"Sneeze," replied the Chinese, proudly.

The official looked hard at him. "Is that your Chinese name?" he asked.

"No, Melican name," said the Oriental blandly.

"Then let's have your native name."

"Ah Choo."

Skin Game

"Dad, we learned at school today that the animals have a new fur every winter."

"Be quiet. Your mother is in the next room."

City Girl

What is this stuff I've just picked?

Wow; that's poison ivy.

Well, don't get excited, Im not going to eat it.

Loyalty

A member of the faculty in a London medical college was appointed an honorary physician to the King. He proudly wrote a notice on the blackboard in his classroom.

"Professor Jennings informs his students that he has been appointed honorary physician to His Majesty, King George."

When he returned to the classroom in the afternoon, someone had written below the notice, this line: "God Save the King."

Make Good

Small Boy—Say, mister, was you ever a little boy?

Grocer—Why, certainly.

And did you ever visit the woodshed with your pa?

Yes, yes, lad, I know.

And after your pa had finished tannin' you, did you ever make a vow that if you ever had the chance you would do all you could to stop such injustice to little boys?

Yes, lad, I did; I did, many a time.

Well, I want five pounds of sugar, and I lost the money.

Enough

Is a one-pound box of candy an appropriate gift for my girl friend?

Yes, if she has no brothers.

True to Form

At a recent advertising meeting in Chicago, several true-life stories made the rounds. It seems that out in Iowa a well known press service was making a survey of opinions of newspaper publishers, to see how they stood on current questions. The gentlemen making the survey encountered one of that rare type of country newspaper editor, who eyed them over the top of his glasses and frankly told them he hadn't yet made up his mind whether or not he liked the New Deal. They were amazed, and showed it, so he added:

"But, when I do decide, believe me, I'm going to be bitter as hell."

What a Hint

Sailor—I guess I'm just a little pebble in your life.

Sweetie—Well, if you feel that way about it, why don't you try becoming a little boulder?

Thinking Out Loud

A woman down East claims she has a husband of rare gifts. She says: "He hasn't given me one since we were married."

In the lovelorn column of a newspaper, a woman wants to know how she can keep her husband from lying about where he spends his evenings. We know the answer to that one: Stop asking him.

We wonder if it would be possible to get as excited over things as a radio announcer thinks he makes us.

Case of Necessity

Sally, I saw you deliberately put your arms around Fred's neck and kiss him."

Well, he had to have it somehow. He's too honest to steal and too proud to beg.

Not There

What did the accused say to you?

He said that he had taken the car.

Yes, but did he speak in the third person?

No, there was no third person present.

Now, understand me. I mean, did he say "I have stolen the car"?

No, sir. You never came into the argument.

HOW QUICKLY THE

MILLER

Cleans-Out!

—sand and sediment, you will be surprised at the increased "*oil runs*" after cleaning-out with a MILLER—*the Sand Pump in World-Wide use!*

The MILLER is made in diameters of 2½, 3, 3½, 4, 4¼, 5, 5½, 7 and 9 inches and lengths of 20, 25 and 30 feet. 5/32-inch wall thickness in REGULAR Type, ¼-inch wall tubes HEAVY Type Sand Pumps.

INTERCHANGEABLE BOTTOMS

To Meet Every Condition

● BAILER BOTTOM

With the Bailer Bottom installed the MILLER is quickly changed to a Bailer giving you a combination of either Bailer or a Sand Pump in one tool.

● SAND BOTTOM

Used when tools are run and when well is shot to quickly remove loose material.

● STAR BOTTOM

Used for cutting the sand loose.

● CHISEL BOTTOM

(In Pump)

With this bottom tightly packed sand can be easily broken in small pieces so it can be picked up in the pump.

Write for Descriptive Folder and Price List

See Pages 1564-65 COMPOSITE CATALOG

PATENTS NO. 1570340 NO. 1523608 NO. 1787380 NO. 1862628 NO. 1866626 NO. 2032467

MILLER Sand Pump Co.

General Offices and Factory:

OKLAHOMA CITY, OKLAHOMA

1524 S.E. 29th P.O. Box 4516 Tel. 7-6884

Branches:

SAPULPA Okla. Tel: 341

KILGORE Texas Tel: 545

HOUSTON Texas Tel: P-2841

FOR SALE BY SUPPLY STORES EVERYWHERE

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The Record of the Moore Derrick

speaks for the

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Moore

Engineering that has

developed with the Industry . . .

Field Stocks and Field Service . . .

SERVICE FROM THE GROUND UP FOR THIRTY-ONE YEARS

FITS LIKE A GLOVE

THEY decided to open up one of the upper sands—but there was water above and below. So they shot 'em both, and set the cementing-tool between them.

Then, in 2 hours and 35 minutes, 60 sacks of 'Starcor' were squeezed through perforations below the tool. Next, they closed it, backed off, and in 30 minutes squeezed 20 sacks through perforations above the tool. Pretty conclusive proof that 'Starcor' stays pumpable plenty long to do any Squeeze Job!

Three days later, they drilled out, shot the sand and got pipe-line oil without a drop of water. Another reason why Oil Men say: " 'Starcor' fits these Squeeze-job problems like a glove." You'll say the same thing, if you'll try 'Starcor' next time.

Use 'Starcor'*, also, for deep wells, high temperatures, extra sulphate resistance. 'Incor'* for wells of moderate depth. Lone Star for construction work above ground. Portland cements, all—each the quality standard-bearer in its own field.

*Reg. U.S. Pat. Off.

TWO PORTLAND CEMENTS—BOTH MADE FOR OIL WELLS

USE 'STARCOR'—for deep wells, high temperatures, extra sulphate resistance.

USE 'INCOR'—for wells of moderate depth, and low temperatures.

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MAKERS OF LONE STAR CEMENT • 'INCOR' 24-HOUR CEMENT • 'STARCOR' CEMEN

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NO NIPPLES
NO COUPLING TROUBLES
NO TIGHTENING EVER REQUIRED
AUTOMATIC SEAL • NO LEAKS
FULL FLOW THROUGHOUT

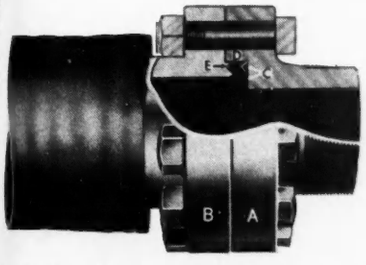
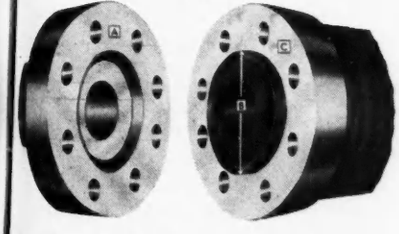


Fig. 1: The Grizzly Pressure Seal. Seepage of fluid into clearance between Adapter "A" and Coupling flange "B" at "C" forces the specially designed terminal of hose body firmly against the adapter and coupling walls at "D" and "E" and forms a positive automatic seal at any pressure. This eliminates the old method of resorting to mechanical pressure to obtain a seal which eventually damages the hose beyond repair. Ample clearance between adapter and coupling flange eliminates any possibility of pinching or damaging hose



The Grizzly Adapter "A" is recessed to accommodate the end of the Hose "B" which is built integral with the Coupling "C". Both the Adapter and Coupling Flange are precision machined to perfect fit. The steel-to-steel connection between Adapter and Coupling positively prevents damaging hose in any manner.

Grizzly Pressure Seal Rotary Hose is a carefully engineered product developed to meet the hard service and terrific pressures involved in drilling wells to any depth—A flexible, steel armored hose with a new, perfected pressure seal coupling built integral with the hose body in such a manner that it is absolutely impossible to pull out or blow out, or leak at any pressure.

The seal is accomplished by the fluid within the hose, as shown by Figure 1. While effective at pressures that are practically nil higher pressures only serve to strengthen this seal.

Grizzly Pressure Seal Rotary Hose is built to eliminate all rotary hose troubles. It is full flow throughout. The coupling is compact and very light in weight. Unitized construction of the hose and coupling, with factory assembly of the adapter and coupling, provides a complete trouble-proof unit ready for immediate use. Hook it up and forget about hose troubles.

Available in two grades—Grizzly Powerflex and Grizzly Cub Red Line—also with Neoprene oil-resisting, abrasion-proof tube for circulating oil. Ask your supply house or write direct for Bulletin No. 20-0F.

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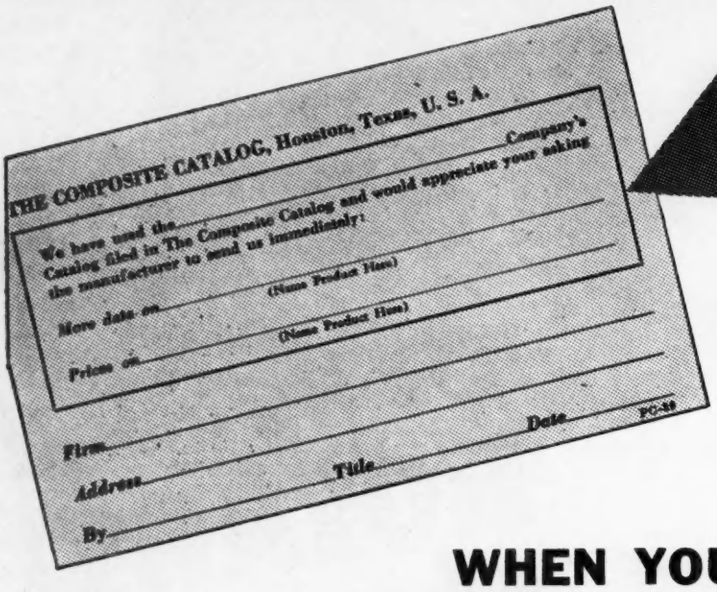
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THE COMPOSITE CATALOG
OF OIL FIELD AND PIPE LINE EQUIPMENT

LOOKING AHEAD

WITH THE EDITOR

Don't Sell Illinois Short

WHILE it is true that production in Illinois fields declines rapidly, and that it is necessary to constantly discover new fields if such decreases are to be offset, do not sell Illinois short. Many additional fields are to be found in the region, and many of the pools now producing will yield deeper production. Illinois drilling and production, therefore, should be capable of maintaining present levels or higher ones for some time. This is the impression gained from a tour of the district.

The recent discovery of Devonian lime production in the Salem field, largest in the state, not only will cause redrilling of this field but also the testing of deeper zones elsewhere. Already 14 producing horizons have been proven productive in the basin, and others are looked upon as having distinct possibilities.

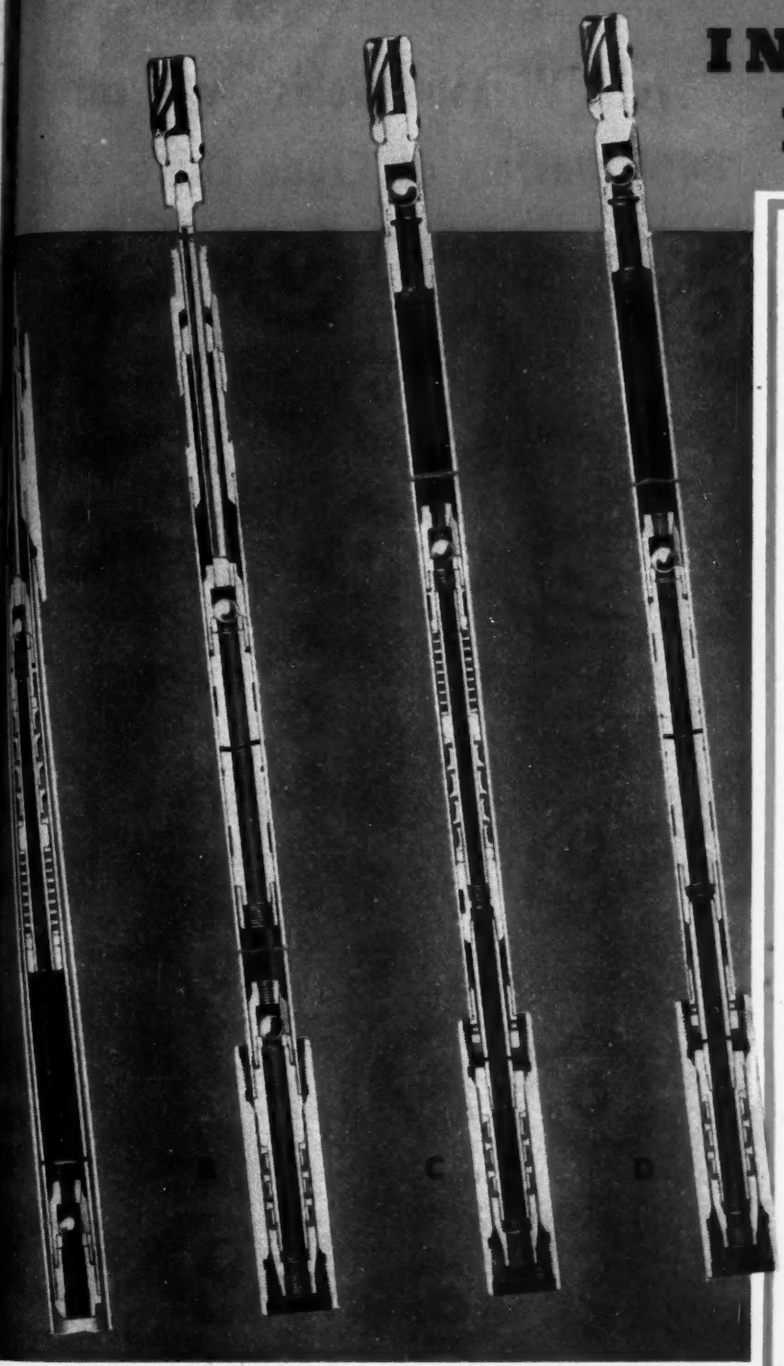
The play in all probability will spread over a larger territory than at present, with the area west and northwest of Salem appearing particularly attractive due to the presence of sand beds, whereas the heart of the basin is dependent upon lime formations.

The present hot spot, outside of Devonian lime drilling at Salem, is the Eason field in White County, in southeastern Illinois. This field has more gas than others found to date, and a large structure is indicated. Whether it will be as large as Salem or Louden cannot yet be predicted.

The OIL WEEKLY, Published every Monday. Entered as second-class mail matter December 23, 1916, at the post office at Houston, Texas, under act of March 3, 1879.

SILVERLINE *Performance*

...NOW AVAILABLE IN A NEW LINE OF INSERT PUMPS



THE name SILVERLINE on a Working Barrel is recognized as a warrantee of *long service-life* and *economical production.* The bulk of the ever expanding orders for SILVERLINE Barrels are *repeat orders* from satisfied users.

To extend this high standard of performance, "Oilwell" now manufactures SILVERLINE Insert Pumps. They are available in both stationary-barrel and traveling-tube types in a wide range of sizes. Complete interchangeability permits many combinations of A.P.I. parts to suit well conditions. Two popular combinations of parts are illustrated for each type pump.

The following are some of the optional parts:

* ***Plunger, with or without top or bottom extension***
* ***Cup-type traveling valve***
* ***Combination traveling valve***
* ***Gas valve***
* ***Top or bottom seating assemblies***

Give "Oilwell" SILVERLINE Insert Pumps an opportunity to *prove* their over-all economy in your wells.

A Stationary-barrel Insert Pump with Top Seating Assembly and Combination Traveling Valve.
B Stationary-barrel Insert Pump with Bottom Seating Assembly and Plunger (without top or bottom extension).
C Traveling-tube Insert Pump with Combination Valve.
D Traveling-tube Insert Pump with Plunger (without top or bottom extension).

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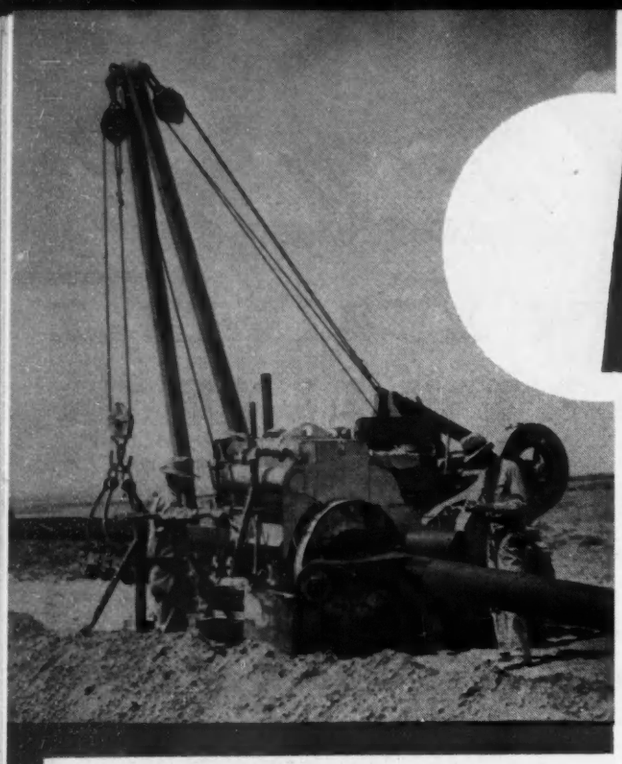
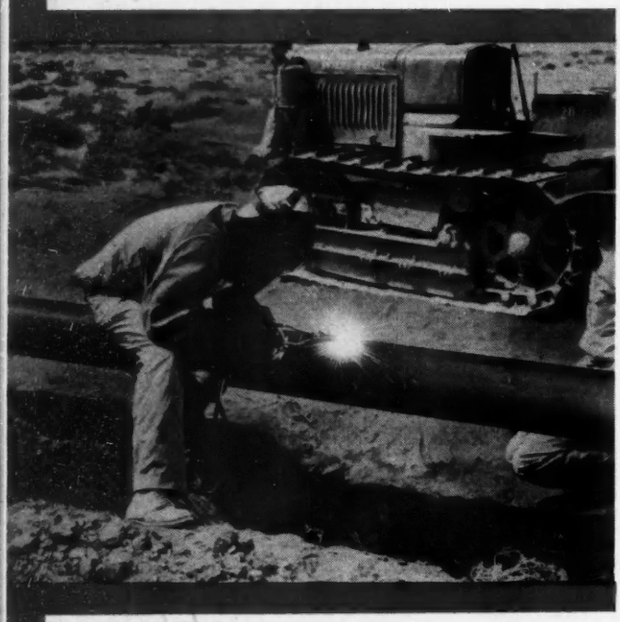
A 438-MILE

"Walls Without Welds" will carry 8400 Barrels of Crude Oil a day across the Great Divide



WRAPPING PIPE before lowering into trench. The clean, smooth surface of NATIONAL Seamless is ideal for coatings and wrappings for bad soil conditions.



FIELD WELDING—This welder is joining two 8" sections of NATIONAL Seamless Line Pipe. The beveled ends furnished for welded lines are smooth and accurately cut. The uniform metal results in better joints and permits the welder to complete more jobs per day.

HERE, STRETCHING INTO THE DISTANCE as far as the eye can see, NATIONAL Seamless crosses a wide plateau, en route to Salt Lake City. NATIONAL Seamless is a favorite with pipe line engineers because it is easily handled, readily joined and laid with a minimum of time and labor.

FROM Fort Laramie to Salt Lake City, across some of the most mountainous regions of America, a great new pipe line is being laid. A line made up entirely of NATIONAL Seamless Pipe. 438 miles of "Walls Without Welds."

This line will set two noteworthy records. It will be the longest to be laid since 1930—and the first major oil line to cross the Great Divide. 8400 barrels of crude oil a day are expected to pour through it, transported more economically from field to refinery. Coming within 24 miles of crossing the entire state of Wyoming, it is in short distance of every oil field in eastern and southern Wyoming and northwestern Colorado.

Technical experts agree that NATIONAL Seamless is the logical choice for lines like this, that demand absolute dependability. A section of NATIONAL Seamless Pipe is a balanced, homogeneous unit, pierced and rolled from a solid billet of steel, with no longitudinal line of potential weakness. To serve economically for many years on vital jobs like this, line pipe must possess the strength to withstand unexpected pressures and stresses. Wall strength must be uniform throughout. Lengths must be straight and provide ample ductility for easy bending. That is why, on so many important projects, NATIONAL Seamless Line Pipe is usually specified.

On your next job depend on NATIONAL Seamless to save time, labor and money. There's a nation-wide trend toward this pipe for oil, gas, and gasoline lines.

NATIONAL TUBE COMPANY

PITTSBURGH, PA.

United States Steel Products Company, New York, *Export Distributors*

UNITED STATES STEEL

STEADY PROGRESS FURTHER INSURED by adherence to delivery schedules. Getting pipe where and when it is needed is of vital importance to the "on time" completion of a project like this. The National organization on this job as on all others, cooperates with the contractors in arranging prompt delivery to various points along the line.

RECORD-BREAKER!

WALLS WITHOUT WELDS

ERE'S A RELIEF MAP of the country this new line ill cross. 414 miles of eight-inch pipe and 24 miles of t-inch NATIONAL Seamless, it crosses varied types of rrain, including mountain ranges, plateaus, barren d rocky lands. Because this line is "Seamless," it ill afford the greatest possible protection against the nexpected," both in installation and in service.

ATIONAL SEAMLESS

UNIFORM

You can run Youngstown seamless casing by the mile, with the same number of jerks on the line for each joint -- sure you're making a tight connection -- because Youngstown pipe is always uniform.

That's because we make steel in small heats for more accurate control.... have the most severe inspection system in the industry....and make oil country pipe in new mills with the most advanced automatic controls and engineering checks.

Youngstown casing, drill pipe, tubing and line pipe is uniform, tough, precision-built----which makes it easier for you to use, saves your time, helps you do a better job faster.

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